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OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 83, No. 2 | 535 North Dearborn Street, CHICAGO, ILL. | JULY 12, 1924

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 83, NO. 2 CHICAGO, ILLINOIS JULY 12, 1924

THE SPECIALIST IN PATHOLOGIC ANATOMY

THE "TISSUE PATHOLOGIST" *

KENNETH M. LYNCH, M.D.

DALLAS, TEXAS

Believing that the status of the "tissue diagnostician," so called, in the practicing medical profession of this country is one that may be seriously brought into question, the present occasion has given me the opportunity to undertake an investigation to determine whether my own observations and opinions are based on fact or fancy, and to present a digest of a situation that should be the subject of more concern than is apparent, particularly among those who are undertaking the treatment of neoplasms.

The impetus that has been given to laboratory medicine in the last few years has produced a demand for "clinical pathologists" out of proportion to the supply of people adequately prepared to undertake this work. As a consequence, the country has been flooded with incompetent people, both nonmedical and medical, who have taken the opportunity to declare themselves pathologists, and who have been accepted largely on their own estimates. Ten years ago, the practicing medical laboratorian was comparatively unknown; many cities of considerable size had none, and virtually no medical laboratory work was done outside the walls of the larger and better hospitals. Many small hospitals made no provision for laboratory examinations, and, except in teaching hospitals and other outstanding institutions of the kind, provision for such work was very meager in any case. At present, the members of the profession of a town above 10,000 in population which has not its laboratory physician are ashamed to have that fact known. Cities of from 150,000 to 200,000 may be found to have up to five or more physicians limiting their practice to laboratory medicine. Hospitals have been forced to equip adequately for a minimum of laboratory procedures. It is but natural that this really enormous demand could not be met by an adequate supply of capable and sufficiently trained people, especially in view of the difficult and unsettled financial status of this branch of the profession. While the situation is bad enough in all lines of laboratory medicine, the more exacting the piece of work to be done, the worse the abuse of it under these conditions.

It is not difficult to establish the premise that the diagnosis of tissues is the most difficult and exacting in the matters of knowledge, experience and judgment of all the things that the laboratorian is called on to do. This being the case, it naturally follows that the least satisfaction is being delivered in this highly important piece of work.

That my own beliefs and observations in this matter might be thoroughly checked, I have submitted a questionnaire to a number of the leading pathologists of the country, virtually all of whom are heads of departments in the leading medical schools, outstanding men who are at the head of the profession, who are in constant touch with current conditions, and who are widely scattered throughout the land.

MINIMUM PREPARATION

The first question asked is: What should be the minimum necessary training for one who would be reliable in the general diagnosis of tissues?

In order that any definite answer may be given to this question, one must assume that the candidate be of good average intelligence and natural ability, and that he has a certain predilection for the work that he contemplates undertaking. Quite naturally, no two persons will reach the same plane with parallel courses; but the same proposition holds good in any line of endeavor. The following answers are fair samples of the positions taken by my correspondents:

1. The minimum essential preparation would be equivalent to that which should be required of a specialist in any other branch. This means, quite naturally, a medical education, preferably some hospital experience, a certain predilection for laboratory work, and at least three years in the study, teaching and writing of general pathologic anatomy.
2. I should say two years under a competent teacher in a laboratory with a large routine, and where it is possible to learn the end-results of the cases studied pathologically.
3. A medical degree from a reputable school, with two years' internship in a diagnostic pathologic laboratory.
4. Such pathologists grow up exclusively in connection with medical schools and teaching, and as a rule a very well trained and alert young man becomes fairly competent only after four or five years of close training. He should have done two or three hundred necropsies and interpreted several thousand sections.
5. Graduation from a good medical school, followed by two or, better, three years' special study under a good pathologist in a laboratory where there is plenty of material.

One suggests that the tissue pathologist should be a working surgeon. This carries, to my mind, the thought of an ideal. Were each surgeon capable of following his clinical and operative observations by a finished study of the tissues involved, the otherwise almost unavoidable interruption in sequence would be corrected. This carries a thought worthy of deep consideration by a preparing surgeon. Why could not he carry special training in pathology along with his corresponding training in surgery? He would thus be ideally equipped for surgical practice. This plan could undoubtedly be

* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

carried out by individuals, but it does not offer a solution to the problem in hand, which involves a system already established.

There is a practical unanimity of opinion among my correspondents that the candidate should be a graduate of a reputable medical school, and the majority of them specify the necessity of hospital service prior to special training. As to the period of special training, there is a general agreement that two years is the minimum; the majority believe that from two to three years is a reasonable period. One of our foremost authorities on the pathology of neoplasms specifies from four to five years, while one who has had considerable experience in the actual practice of the specialty says ten years.

It is not difficult to make a composite reply to this question, and to lay down the proposition that the practicing tissue pathologist should have at least from two to three years' special training in a laboratory service having large surgical and necropsy connections, under the direction of a good pathologist, after graduating from a reputable medical school and, preferably, serving a hospital internship.

IDEAL PREPARATION

I have asked next: What is the ideal preparation for such work?

The aim of this question is toward establishing the course one must pursue to qualify as an expert in the evaluation of disease processes from study of the tissue involved. Naturally, a minimum preparation cannot qualify a person for more than ordinary routine work, i. e., the interpretation of the clear-cut, frank and ordinary lesions. Any one who has studied tissues for two or three years realizes fully how definite are his limitations at the end of that time, and how frequently he encounters puzzling conditions with which he is unable to cope to his own satisfaction. What, then, must be the means of obtaining the breadth of knowledge and judgment necessary to be conscious of an ability to evaluate the unusual, the extraordinary?

The replies to this question give from one to five years of additional study as the period for such attainment. In general, the lower the term given for minimum preparation, the shorter the additional time deemed necessary for special proficiency. Some name no specific period of time, but say that many years or long service are needed, while practically all are particular in specifying that this training should be under able and inspiring teachers.

For a composite reply to this question, one could say that from three to five years of additional study, or from eight to ten years altogether, under an able leader, in a service with abundant necropsy and surgical diagnostic material, with full opportunity to observe end-results, should qualify a man of personal fitness to do critical anatomic analysis of any and all diseased tissue.

SELF-TAUGHT PATHOLOGISTS

On account of the many persons who are attempting to do this exacting work with little or no preliminary preparation, I have inquired whether it is probable or even possible that a self-taught individual might attain a measure of proficiency warranting dependence in diagnosis. The answer is a practically unanimous and emphatic no, with embellishment by some and little inclination to qualify by any. It is the further opinion that one must remain in constant touch with a continuous supply of material in order to retain proficiency. It is likened in the one instance to a self-taught surgeon, and in the second to one who does only an occasional operation.

SCARCITY OF RELIABLE TISSUE PATHOLOGISTS

Having obtained expressions of opinion as to the necessary requirements for preparation for tissue diagnosis, I have made inquiries as to the existing conditions in practice. I have asked whether competent tissue pathologists are commonly encountered outside well known medical schools, hospitals and clinics, and whether there are many clinical pathologists without adequate preparation attempting to do tissue work. While a few consider that they are not in position to answer these questions correctly, the general opinion is that reliable tissue diagnosticians are very scarce, some say even in well known medical schools, hospitals and clinics, and that there are a great many practicing clinical pathologists utterly unfitted to make tissue diagnosis.

It should be borne in mind that the men who have answered these questions cover well the territory of the whole country, from Chicago to New Orleans and from Boston to San Francisco. With hardly an exception, they are inclined to deplore the condition that exists. All who express themselves are impressed with the need of reform; some are most emphatic about the danger that the situation enforces on people suffering from neoplasms or other conditions demanding tissue diagnosis, but few see any hope for material early relief.

STATUS OF THE SPECIALTY

It seems perfectly clear that there is an economic background to the proposition. From a comparative standpoint, a medical graduate with foresight, inherent ability and aggressiveness sees little in the pathologic field beyond the possibility of a "pot boiler" for the moment. This does not mean that this is a starvation specialty. On the contrary, the average income of the practicing clinical pathologist is probably above the general average of the profession. In fact, the comparative ease with which this may be gained and the absence of necessity to make any extended preparation is the reason for the remarkable growth of the specialty in the last few years. Many who have not been inclined to put up the fight necessary for even a comparable success in other lines of work have grasped this opportunity. On the other hand, the limitations of opportunity are fairly definite, much more so than in any other line of medical work, and the chances of breaking these limitations are very small. Virtually the only person of outstanding ability deliberately to enter the field is the one with a definite ambition and objective who sees an individual opportunity to attain it. I believe that this must be grasped before a thorough understanding of the situation may be had.

CONTROL WITHIN THE PROFESSION

The other branch of the profession that should be the most concerned in this matter is the surgical branch. Now, while it is not to be doubted that the leaders in surgery are fuly aware of the requirements for tissue diagnosis, there exists a remarkable state of ignorance and apathy in the remaining majority. Not infrequently, one encounters this where least expected. It may be safe to conclude that there will be unsatisfactory tissue diagnosis in direct proportion and as long as surgeons are content with it.

To my mind, laboratory medicine offers the one specialty that may be completely controlled by the profession itself. As one of my correspondents expresses it:

> The continuous and outstanding criticism that has been made and is possible to make against the medical profession is the tendency to assume knowledge which is not possessed and, what is worse, to form judgments which have to do with questions of life and death, when not only the proper information for forming these judgments is not possessed but the mental and educational equipment makes such a possession practically impossible.

This should not obtain in laboratory medicine. It is directly responsible to and dependent on the other branches of the profession. We have here the opportunity to determine whether the assumption of special knowledge is justified, and if it is not it should not be supported, much less encouraged.

This, of course, has nothing to do with the supply of adequately trained pathologists for this work, nor would the supply be likely to be materially affected. This is governed by an unalterable natural law. Only when the demand for a competent pathologist equals the demand for a competent surgeon to the extent that the financial status of the two are more nearly related, and only then, will the supply be affected to the end that the pathologist will be as easily obtainable. And this will not be soon.

We can lay down reasonable requirements for those who would assume to do tissue work, and we can lay on the profession the responsibility for safeguarding the health and lives of the people who are affected by it. The burden of responsibility for finding reliable tissue diagnosis rests on the one who has been entrusted with the tissue. The requirements are exacting, and it appears that as yet Mahomet will be compelled to go to the mountain.

RELATIONSHIP BETWEEN CERTAIN PRODUCTS OF METABOLISM AND ARTERIAL HYPERTENSION *

RALPH H. MAJOR, M.D.
KANSAS CITY, KAN.

The cause of high blood pressure remains one of the most baffling problems in medicine. Ever since von Basch, in 1876, gave us a practical method of estimating blood pressure, every physician has been more or less interested in the subject of arterial hypertension. We have learned much about its frequency of occurrence, its varied symptomatology, its numerous complications and its association with many diseases. The critical student, however, must feel a sense of dissatisfaction with almost all the theories advanced to explain its genesis.

High protein diets, excess of epinephrin in the circulation and disturbances in sodium chlorid metabolism have been suggested as possible causes of arterial hypertension. While there is some evidence that these substances may be concerned in the production of high blood pressure, it is interesting to note that Strouse [1] found high protein diets to be without effect on the blood pressure of hypertensive patients; that Mosenthal [2] states that no definite proof of a relationship of the suprarenal glands to high blood pressure has been produced, and that O'Hare and Walker [3] believe that salt plays little or no rôle in the etiology of arterial hypertension.

Tigerstedt and Bergman,[4] Vincent and Sheen [4] and Batty Shaw [5] have shown that extracts of kidney tissue, when injected into animals, produce an elevation of blood pressure, which, under favorable conditions, may persist for twenty minutes. It is conceivable, according to Shaw, that, in chronic nephritis, the kidney that is undergoing destruction may let loose this pressor substance into the general circulation. Shaw, however, points out that this hypothesis fails utterly to explain those cases in which hypertension is present with kidneys "to all clinical intents and purposes normal."

Other observers have suggested the possible relationship of certain metabolic products to high blood pressure. The very rapid rise in blood pressure following acute suppression of the urine has suggested that the retention of some pressor substance is responsible for the hypertension observed. At the present time, however, the evidence for the presence of such a pressor substance in the circulation is largely circumstantial rather than direct.

Shaw discusses the theory that a pressor body of protein origin is liberated into the circulation and produces high blood pressure, but he adds that "so far, to date, no metabolite has been discovered which is pressor in type." During the past year, in collaboration with Dr. Walter Stephenson, I have succeeded, I believe, in demonstrating that there is a metabolite which is pressor in type and produces a sustained rise in blood pressure, unequaled by any hitherto described substance.

Beginning with the assumption that some protein body, a product of metabolism, had a pressor effect, we investigated the properties of some of the better known metabolites. A series of experiments showed that urea, uric acid, creatin and creatinin had no constant effect on the blood pressure, but another group of experiments showed that the guanidine bases have a very powerful pressor effect.

Kutscher and Lohmann [6] were the first to describe methylguanidin in the urine of normal persons. Achelis [7] found it in the urine of the dog, horse and man, and Engeland [8] demonstrated dimethylguanidin in the urine. Most of the interest attracted to these substances lies in their possible relationship to tetany, parathyroprivia and to idiopathic tetany, as indicated by the work of Koch,[9] Noël Paton and Findlay,[10] Findlay and Sharpe,[11] and Nattrass and Sharpe.[12]

In our experiments we have used methylguanidin sulphate, methylguanidin nitrate, dimethylguanidin sulphate, guanidin carbonate, guanidin thiocyanate and guanidin hydrochlorid. All these compounds show a very striking ability to raise the blood pressure and to

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* From the Department of Internal Medicine, University of Kansas School of Medicine.

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Strouse, Solomon; and Kelman, S. R.: Protein Feeding and High Blood Pressure, Arch. Int. Med. **31**: 151 (Feb.) 1923.
2. Mosenthal, Herman, in Nelson's Medicine **4**: 508, 1922.
3. O'Hare, J. P., and Walker, W. G.: Salt in Vascular Hypertension, Arch. Int. Med. **32**: 283 (Aug.) 1923.
4. Quoted by Shaw (Footnote 5).
5. Shaw, H. B.: Hyperiesia and Hyperpiesis, 1922.
6. Kutscher and Lohmann: Der Nachweis toxischer Basen im Harn, Ztschr. f. physiol. Chem. **49**: 81, 1908.
7. Achelis, W.: Ueber das Vorkommen von Methylguanidin in Harn, Ztschr. f. physiol. Chem. **50**: 10, 1906.
8. Engeland, R.: Ueber den Nachweis organischer Basen im Harn, Ztschr. f. physiol. Chem. **75**: 49, 1908.
9. Koch, W. F.: On the Occurrence of Methylguanidine in the Urine of Parathyroidectomized Animals, J. Biol. Chem. **12**: 313, 1912.
10. Paton, D. N., and Findlay, Leonard: Tetania Parathyreopriva, Quart. J. Exper. Physiol. **10**: 315, 1917.
11. Findlay, Leonard; and Sharpe, J. S.: Adult Tetany and Methylguanidine, Quart. J. Med. **13**: 433 (July) 1920.
12. Nattrass, F. J., and Sharpe, J. S.: Adolescent Tetany and Its Relation to Guanidine, Brit. M. J. **2**: 238 (Aug. 13) 1921.

maintain it at a high level (Fig. 1). The blood pressure in dogs is often doubled or even tripled within a few minutes after the intravenous or intramuscular injection of from 0.1 to 0.2 gm. of methylguanidin sulphate per kilogram of body weight, this high pressure persisting often from four to five hours. This marked pressor effect is not an inconstant finding obtained only under the most favorable conditions, but has been noted in every one of more than fifty experiments. The blood pressure readings were made on dogs under light ether anesthesia from a mercury manometer connected with the carotid artery in the usual manner.

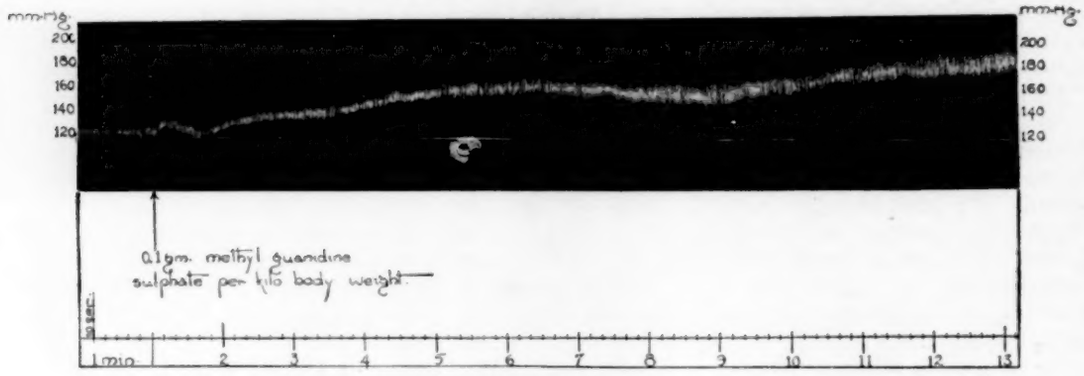

Fig. 1.—Effect of methylguanidin sulphate on blood pressure; dose, 0.1 gm. per kilogram of body weight; rise in blood pressure from 120 to 190 mm. in twelve minutes.

In addition to these effects on the blood pressure, the guanidin compounds also produce a marked decrease in the respiratory rate and a slowing of the pulse, with an increase in the amplitude of the heart beat. When toxic doses are given, the blood pressure, after a preliminary sharp rise, often falls, the respiration may be paralyzed, and the heart beat usually becomes extremely irregular. Also, as is well known, toxic doses of these compounds will produce twitchings very similar to those seen in tetany, and larger doses may cause severe convulsions.

We have been interested in studying some of the features of the mechanism by which this high blood pressure is produced. Section of the vagi after injection of the guanidin compounds produces no effect on the elevated blood pressure, and if both vagi are cut before injection, the blood pressure rises just as it does in animals with intact vagi. The kidney, studied by means of an oncometer, shows no change in volume while the blood pressure is rising as the result of the injection of gaunidin compounds. In the decerebrated dog, the injection of methylguanidin will produce a prompt rise in blood pressure, thus indicating that such a rise is due, in part at least, to peripheral vasomotor action.

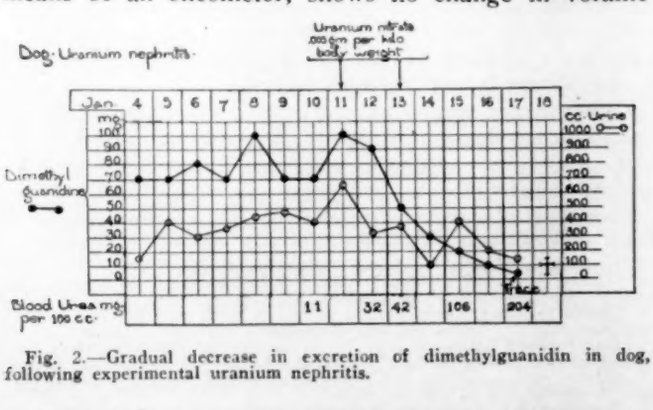

Fig. 2.—Gradual decrease in excretion of dimethylguanidin in dog, following experimental uranium nephritis.

Also the effect of certain substances on the hypertension produced by these compounds has been studied. It has been found that a 10 per cent. solution of calcium chlorid, potassium chlorid and ammonium chlorid in doses of 0.1 gm. per kilogram, when slowly administered intravenously, produces a prompt and persistent fall of high blood pressure to a normal level. Normal hydrochloric acid in doses of 1 c.c. per kilogram, injected intravenously, produced the same result. Veratrum viride and amyl nitrite produce only a very temporary reduction in blood pressure.

After these preliminary studies on the pharmacologic action of the guanidin compounds, a study of the excretion of these substances in the urine was undertaken. The method of Findlay and Sharpe [11] was employed in these estimations. This method, we found early in our work, does not, as a rule, give us the guanidin bases entirely free from creatinin, and in all instances when there was a positive reaction with Jaffe's test, a colorimetric determination of the creatinin by Folin's method was carried out, and the amount of creatinin obtained was subtracted from the total. While the method of Findlay and Sharpe is not as simple and possibly not as accurate as future methods may be, we feel that a large series of parallel determinations gives us a reliable basis for comparison.

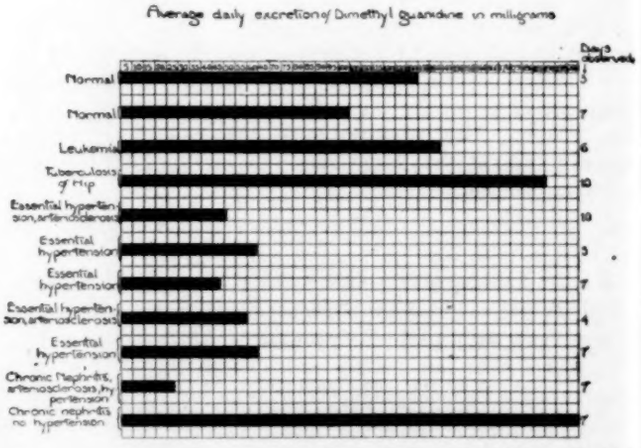

Fig. 3.—Daily excretion of guanidin bases, calculated as dimethylguanidin, in a series of patients and normal controls; there is diminished excretion in patients with arterial hypertension.

The excretion of guanidin bases in the urine of dogs poisoned with uranium nitrate was first studied. After the development of a severe nephritis with high values for blood urea and blood creatinin, a marked and gradual diminution in the output of the guanidin bases occurs, which persists until the death of the animal. These results were obtained in four experiments, a typical example being shown in Figure 2.

The excretion of guanidin bases was then studied in the urine of normal persons and of patients suffering from diabetes mellitus, chronic nephritis, essential

hypertension and other diseases. All, while under observation, were placed on a meat free diet.

A summary of these results (Fig. 3) shows that, while normal persons and patients with a normal temperature and a normal blood pressure have shown an average daily excretion of 100 mg., the patients with

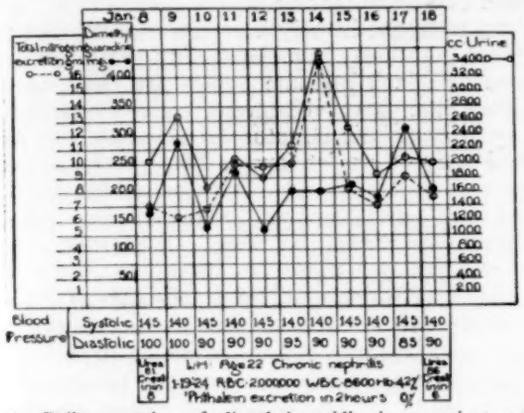
Jan 8 9 10 11 12 13 14 15 16 17 18
Dimethyl guanidine excretion in mg.
cc Urine
Blood Pressure
Systolic 145 140 145 140 145 140 140 145 140 145 140
Diastolic 100 100 90 90 90 95 90 90 90 85 90
Urea 21 Creatinin 8
Urea 18 Creatinin 8
Wm Age 22 Chronic nephritis
1-1924 RBC 2000000 WBC 6600 to 42%
Phthalein excretion in 2 hours 0%

Fig. 4.—Daily excretion of dimethylguanidin in a patient suffering from chronic nephritis but with no hypertension.

a high blood pressure show a marked diminution in the excretion of guanidin bases. Several febrile patients have shown a marked increase in the output of guanidin bases, and one very interesting patient with a severe chronic nephritis and evidence of marked protein destruction showed a high output of guanidin bases, but had a normal blood pressure (Fig. 4).

We have been very much interested to find that patients suffering from essential hypertension and from chronic nephritis with hypertension (Fig. 5) have shown a decreased output of guanidin bases. Further observations will show whether this is a constant finding. The guanidin bases, as indicated by the animal experiments, are probably destroyed with difficulty or excreted very slowly, since their physiologic effects are so lasting.

In chronic nephritis, the damaged kidney is unable to excrete properly urea, uric acid, creatin and creatinin and that undetermined group of substances resulting from protein metabolism, classed under nonprotein nitrogen, a group that includes the guanidin compounds. While urea, uric acid, creatin and creatinin produce no effect on the blood pressure, it is interesting to see that guanidin compounds exert such a profound pressor effect.

It seems quite possible that kidneys badly damaged by chronic nephritis, or only slightly damaged by arteriosclerosis or by a small vessel sclerosis, might be unable to excrete properly these substances having such a marked pressor effect. Such a retention of guanidin bases, unless they were utilized or destroyed, might result in an elevation of blood pressure.

Further study of the guanidin bases from the standpoint of their pressor activities should be undertaken. We feel that we have a new method of approaching the problems of hypertension, when we realize that there is one metabolite that has a marked pressor effect.

ABSTRACT OF DISCUSSION

DR. JOSEPH L. MILLER, Chicago: Hypertension is one of the unsolved problems in internal medicine. As it is more frequently responsible for cardiac decompensation in adults than any other cardiac lesion, its importance becomes apparent. Until comparatively recent years, hypertension was considered merely as a complication of nephritis, and at present the one clear-cut etiologic factor in hypertension is acute nephritis. However, the large majority of patients with hypertension fall into a group of what is known as the primary or essential types, in which with all known kidney tests there is no evidence of kidney involvement. However, if one follows a patient with hypertension for a number of years, it will be found almost invariably that sooner or later the urine will contain albumin and numerous casts. These may appear in showers or may be present continuously. It is probable that the pathologic physiology of hypertension is vascular spasm, and the problem resolves itself into determining the nature of the substance responsible for such vascular spasm. Attention has been directed toward the amino-acids, or some products derived from them by bacterial action, capable of causing vascular spasm. Tyramin is a substance derived from tyrosin, one of the amino-acids, and has epinephrin-like effect, causing a marked vascular spasm with rise in blood pressure. Dr. Major has called attention to another amino-acid, guanidin, which will produce the same effect. This makes a very promising field for research. In case we determine that some of these products are responsible for vascular spasm, the question then arises as to whether they produce hypertension in certain individuals, because this substance is present in unusually large amount, or whether they produce their effect in persons who are incapable of eliminating them normally through the kidney. This last view appeals to me, because it retains the kidney as a factor in hypertension. We believe at present that the various nitrogenous products eliminated in the urine pass through the kidney with varying degrees of facility, the uric acid being the most readily retained. This hypothetic substance responsible for vascular spasm may pass out through the kidney with great difficulty and may be retained while there is such slight disturbance in the function of the kidney that we are unable to recognize it by our present methods. This would, then, place disturbed kidney function as a primary factor. It would also explain why, as hypertension progresses, evidence of kidney disturbances often appear; that is, the process is slowly progressive.

DR. SOLOMON STROUSE, Chicago: As long as hypertension is bound up with nephritis, as long as people think that retention of nonprotein nitrogen in nephritis is the cause of hypertension, so long we shall be in the dark as to what is going on. That does not mean that the metabolite which Dr. Major has demonstrated is not responsible. His report was given modestly. It opens up a field that should cause thoughtful clinicians a lot more thought. We see cases of clinical uremia without any retention of nitrogen or increase of urea, and sometimes, with very marked hypertension, we see no retention, as in a recent case of clinical uremia with convulsions and hypertension of about 200, yet with the nitrogen products of the blood normal. In another case of nephritis, with a nonprotein nitrogen of 350, the patient was normal and free from uremic symptoms. Dr. Major's work may clear up a great deal we do not know about the cause of uremia as well as of hypertension. I believe that we must be open-minded.

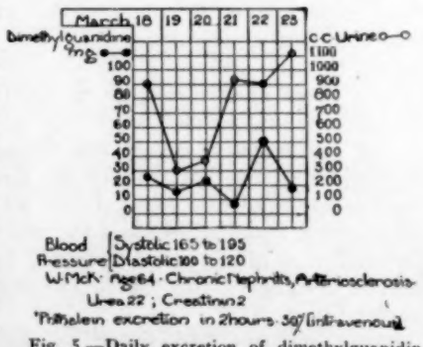
March 18 19 20 21 22 23
Dimethylguanidine mg.
cc Urine
Blood Pressure
Systolic 165 to 195
Diastolic 100 to 120
W. McK. Age 64 Chronic Nephritis, Arteriosclerosis
Urea 22; Creatinin 2
Phthalein excretion in 2 hours 30% (intravenous)

Fig. 5.—Daily excretion of dimethylguanidin in a patient suffering from chronic nephritis with hypertension.

DR. RALPH H. MAJOR, Kansas City, Kan.: I am glad to note that both of the gentlemen who have just spoken have realized that I have not tried to clear up the subject of arterial hypertension; I have tried to find one metabolite which would produce this effect and which is excreted from the kidneys with difficulty and is destroyed with difficulty, as shown by the prolonged pharmacologic effect obtained. It is excreted in small amounts in chronic nephritis. I think it is possible that there may be many sub-

stances having this effect. I was interested in what Dr. Miller said about his attitude in regard to disregarding the kidneys altogether. About disregarding essential hypertension, I feel the same way. I have been impressed with the work of O'Hare, showing the importance of small vessel sclerosis in essential hypertension. I think that a substance would be excreted with difficulty by a kidney but slightly damaged, as with small vessel sclerosis. I think that the action on the kidney of these substances may be central, though it is mainly peripheral in effect.

THE PREVENTION OF SCARLET FEVER*

GEORGE F. DICK, M.D.
AND
GLADYS HENRY DICK, M.D.
CHICAGO

The intelligent prevention and treatment of a disease must depend on a definite knowledge of its cause.

When we began the study of scarlet fever, no organism had fulfilled all the requirements of Koch's laws, and it was generally considered a disease of unknown etiology.

A review of the literature of scarlet fever, in 1912, showed that two facts were apparently established: First, that hemolytic streptococci are practically constantly associated with scarlet fever. Second, that during the course of the disease, there is developed an immunity to hemolytic streptococci. This immunity had been demonstrated by the opsonic index, and complement fixation, and especially by means of the agglutination test. We were able to verify these facts by means of cultures and immune reactions reported in 1914 and 1916.

But the association of an organism with a disease, and even the development of immunity to it, do not constitute proof of its etiologic significance. It might be present as a secondary invader, and, as such, it might stimulate the formation of antibodies.

The production of experimental scarlet fever remained the essential step in the determination of the etiology of the disease.

With this in view, we inoculated guinea-pigs, rabbits, mice, pigeons, dogs and small pigs with various materials and cultures from scarlet fever patients. In these experiments, we obtained an occasional rash, and, less frequently, desquamation. But no organism produced in any species a clinical condition resembling scarlet fever closely enough to justify the designation of experimental scarlet fever.

Our own negative results and those of previous workers convinced us that animals are comparatively insusceptible to the disease; and that if we were to overcome the obstacle that had blocked the work of other investigators for so many years, it would be necessary to use human volunteers for the production of experimental scarlet fever.

Blood cultures had failed to reveal any organism present constantly enough to indicate a causal relation. In order to verify, so far as possible, our conclusion that the specific organism of scarlet fever is not, as a rule, present in the blood stream, the first volunteers were inoculated subcutaneously with fresh blood serum and fresh whole blood from early cases of scarlet fever. The results were negative.

A further study of the throat secretions was then undertaken. An attempt was first made to determine whether or not the disease is caused by a filtrable virus persent in the throat. Volunteers were inoculated in the throat and subcutaneously with filtered throat mucus obtained from early cases of scarlet fever. The results of these experiments were also negative.

Then, since the hemolytic streptococcus is the organism most constantly associated with scarlet fever, and the one to which immune bodies are most constantly produced, the next volunteers were inoculated with strains of hemolytic streptococci isolated from uncomplicated cases of scarlet fever. These inoculations were all made by swabbing pure cultures of the streptococci on the tonsils and pharynx. Some of these volunteers developed sore throat and fever, but no rash.

We thought that failure to obtain the rash might be due to relative insusceptibility on the part of the volunteers, and decided to do some further inoculation experiments, using volunteers of an intelligent type, whose full personal and family history could be obtained, and to select them, so far as possible, from those whose childhood had been spent in rural districts, or in the more sheltered homes of the well-to-do.

In this second series of human inoculations, we produced a typical case of scarlet fever by swabbing on the tonsils and pharynx a pure culture of a hemolytic streptococcus isolated from a lesion on the finger of a nurse who acquired the disease while caring for a convalescent scarlet fever patient.

It was still necessary to show whether this case of experimental scarlet fever had been caused by the hemolytic streptococcus or by a filtrable virus associated with it in the culture. A second group of volunteers was inoculated with the same culture after it had been passed through a Berkefeld V filter. These volunteers remained well. After about two weeks had elapsed, and they were still well, they were inoculated with the unfiltered culture. Forty-eight hours later, one of them developed scarlet fever. This experiment furnished evidence that the experimental disease had not been caused by a filtrable virus, but by the hemolytic streptococcus itself. These first cases of experimental scarlet fever were reported, Oct. 6, 1923.

Since the hemolytic streptococcus is found in the throat, and is not usually present in the blood, it is evident that the rash is not produced by the direct action of the streptococcus on the skin. And it was important to learn by what means the organism growing in the throat caused the rash. We found that the streptococcus produces a soluble toxin. This toxin is absorbed into the blood, and causes the nausea and vomiting, and the rash.

The discovery of this toxin offered a scientific basis for: (1) the development of a skin test for susceptibility to scarlet fever; (2) preventive immunization, and (3) the production of an antitoxin.

We now attempted to obtain a skin test for susceptibility to scarlet fever with the toxic filtrate from the same culture that had produced the experimental disease. We found that the filtrate of this culture, when used in the proper dilution, gave positive skin tests in 41.6 per cent. of the persons tested who gave no history of scarlet fever; and that it gave negative, or only slightly positive, skin tests in all the convalescent scarlet fever patients tested.

It was also shown that the action of the toxin is inhibited by convalescent scarlet fever serum, mixed

* Read before the Section on Practice of Medicine at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

with the toxin, or injected intramuscularly before the skin test is made.

In six instances in which we had an opportunity to observe the skin test before and after an attack of scarlet fever, it was positive before the attack, and negative during convalescence.

The streptococci associated with scarlet fever do not all show the same cultural characteristics. They may be divided into two groups according to their effect on mannite. We had produced two cases of experimental scarlet fever with a strain that fermented mannite, and had isolated it from the experimental cases and again grown it in pure culture. All of Koch's laws were thus fulfilled, except that one which requires that the organism be constantly present in the disease. In order to meet this requirement, it was necessary to learn whether or not experimental scarlet fever could be produced with the streptococcus that did not ferment mannite.

Two volunteers were chosen, one with a negative skin test, the other with a positive skin test. A hemolytic streptococcus that did not ferment mannite was isolated from the throat of a scarlet fever patient. Part of a forty-eight hour culture of this organism was swabbed on the tonsils and pharynx of each volunteer. The volunteer who showed a negative skin test remained well, while the one who had shown a positive skin test developed scarlet fever.

Since the streptococci used in these experiments had now fulfilled all the requirements of Koch's laws, the conclusion that they are the cause of scarlet fever was justified.

We have already mentioned that many early investigators had studied the agglutination of streptococci in relation to scarlet fever. Some of these early observers had shown that most of the streptococci associated with scarlet fever are agglutinated by the same immune serum. But recently, Tunnicliff and Dochez have asserted that the agglutination test may be used for the identification of scarlet fever streptococci. That it is not to be relied on for this purpose is shown by the following experiment:

> Two sheep were immunized with living cultures of the two strains of streptococci that had produced experimental scarlet fever in human beings. One sheep was immunized with the strain that fermented mannite. The other was immunized with the strain that did not ferment mannite. The serum of each sheep was tested with both organisms, and it was found that each serum agglutinated its own organism in high dilution, but that there was no cross agglutination.

While these two strains of hemolytic streptococci differ culturally, and are not agglutinated by the same immune serum, they have, in common, the property of producing the specific toxin of scarlet fever.

When small amounts of this toxin are injected into susceptible persons, they may develop general malaise, nausea, vomiting, fever and a scarlatinal rash. These symptoms appear within a few hours after the injection, and disappear within forty-eight hours. Following this reaction, the skin test is negative or only slightly positive.

By beginning with a smaller dose of toxin, it is possible to immunize susceptible persons without this severe reaction. The toxin is first carefully standardized on human beings in order to determine the skin test dose. No animal has yet been found that is suitable for the standardization of the toxin. Adults are immunized by three injections of toxin at five day intervals, beginning with a first dose equivalent to 300 skin test doses, and increasing to 1,000 skin test doses. Experience has shown that the immunization must be carried to the point of a negative skin test. The first change that appears in the skin test, during the course of immunization, is a more rapid fading. Later, usually within a week after the last dose of toxin is given, it becomes entirely negative.

The nurses who come to the Durand Hospital for training in contagious diseases are constantly exposed to scarlet fever. They are all tested for susceptibility. If they show a negative skin test, they are assigned to duty in the hospital, without further precaution. If the skin test is positive, they are immunized with three doses of toxin. When the development of immunity is demonstrated by means of a negative skin test, they are allowed to care for scarlet fever patients.

The prevention of scarlet fever, after exposure, is more complicated. In case of definite exposure, skin tests are made as soon as possible. At the same time, a culture of the throat is made on blood agar plates. If the skin test is negative, nothing more is done. In those with positive skin tests, the next step depends on the throat culture. If the plates show no hemolytic streptococci, active immunization is carried out with three doses of toxin. If the throat culture shows hemolytic streptococci, passive immunization is accomplished by injection of convalescent scarlet fever serum. We use convalescent serum to avoid sensitization to horse serum.

These preventive measures were carried out in a series of 125 persons exposed to scarlet fever. Seventy-three of this series were nurses, who were tested and immunized before exposure. Fifty-two were children who were not seen until after exposure. Sixty-three showed negative skin tests, and received no further treatment. Sixty-two had positive skin tests. Of this number, fifty-two were immunized with toxin. Ten had positive skin tests, and hemolytic streptococci in their throats. They received convalescent serum. Of these ten persons with positive skin tests and hemolytic streptococci in their throats, five already had sore throat and fever at the time they received the serum.

None of these 125 persons exposed to scarlet fever developed the disease.

Controls were afforded by thirty-two nurses and interns on whom skin tests were not made, and by two nurses with positive skin tests who were exposed to scarlet fever before their immunization was completed. These two nurses and five others of this control series contracted scarlet fever.

During the course of scarlet fever, the body manufactures an antitoxin that is capable of neutralizing the scarlet fever toxin. It is the presence of this antitoxin in convalescent scarlet fever serum that makes it of value in the treatment of acute scarlet fever. If horses are injected with gradually increasing doses of the sterile scarlet fever toxin, they also produce an antitoxin. After only two months' immunization, our first horse produced an antitoxin of such strength that 10 c.c. of serum neutralized twenty times the amount of toxin that caused nausea, vomiting, fever, and a rash in susceptible adults.

This antitoxin was then concentrated by the same method used for the concentration of other antitoxic serums. The resulting product is of a higher antitoxin content, and should cause fewer serum reactions than unconcentrated serum. Its therapeutic value can

be determined only by the results obtained from its employment in a large series of cases that have been carefully controlled.

When convalescent scarlet fever serum is not available for prophylactic immunization, this concentrated scarlet fever antitoxin may be used.

Since scarlet fever toxin can be properly standardized only by means of skin tests on a large number of human beings, it is almost certain that improperly standardized toxin will appear on the market. If it is too weak, it will result in negative skin tests in persons who are really susceptible, and in incomplete immunization. If it is too strong, it will give positive skin tests in persons who are actually immune, and will cause severe reactions during the course of immunization.

ABSTRACT OF DISCUSSION

DR. ABRAHAM ZINGHER, New York: We do not know scarlet fever. It is a conglomeration of all kinds of diseases. All sorts of cases come in, and of these a certain definite proportion develop typical scarlet fever five days after admission to the wards. Dr. Dick has brought out important points showing the relationship of the hemolytic streptococcus to scarlet fever. This is of value for our future work. Scarlet fever may be low this year, but we do not know when conditions may bring about an epidemic in another year. I have had an opportunity to have the Dick test used extensively in New York, and have demonstrated the reactions. The test is done with a dilution of 1:1,000, similar to the Schick test. I have added the use of boiled toxin to the test to get rid of the pseudoreactions. We find 8 per cent. positives and 60 per cent. pseudoreactors. Therefore, we must use controls with these children by testing on the other arm also. I have tested more than 7,000 school children, following the lines laid down by work on the Schick test. I think that the work is in the right direction. We find that there exists a placental immunity. The new-born infant is susceptible when the mother is susceptible, and in older children there is increased susceptibility in the ages from birth on. In this there is an analogy to the Schick test. We also find a greater susceptibility in children of the well-to-do classes. I recently tested 300 children in a private school in New York, and found that 83 per cent. of the boys and girls were susceptible up to 18 years, which gave the same figures as for diphtheria susceptibility in the same class of children.

DR. E. C. ROSENOW, Rochester, Minn.: I have watched these results with great interest. One remarkable thing is the specificity. In a long series of animals, arthritis did not occur. With injections of the same animals, in the same way, with the same dose, and with organisms from patients with arthritis, the incidence of arthritis might be 70 per cent. Here, with the same method, the only lesion found was in the large bowel. The mucous colitis was duplicated morphologically in the intestine. Lesions similar to those found in the colon were obtained in the appendix, but not in the colon. They were in Peyer's patches. One hundred of the rabbits injected with other organisms never developed the same lesions as these, and the only time such lesions were obtained was following intravenous injections of a streptococcus obtained from patients ill with so-called intestinal influenza. Occasionally, when strains of streptococci from other animals were used, there was marked effect for the colon; but this was only temporary, and disappeared after a certain number of animal passages. Finally, by the method of using a gradient oxygen tension, and allowing the tissues of the animal to do their own plating, as it were, the tissues of the animals chose those which had damaging power. If we attempted to select these organisms by more plating, the organism sensitive to oxygen either would not grow, or grew poorly, or would be lost after a single anaerobic culture. Therefore, it was difficult to obtain the strain in pure culture, before and after injection.

THE CHOICE OF OPERATION IN CANCER OF THE COLON, NOT INCLUDING THE RECTUM *

FRED W. RANKIN, M.D.
LEXINGTON, KY.

Surgical attack on the colon for cancer differs in the various segments of the bowel, not only in immediate mortality incurred and availability of operative technic, but also from the standpoint of recurrence. Anatomically and functionally, the two halves of the colon differ markedly. The right division, from the operative standpoint, is more easy of mobilization and lends itself more readily to resection than its fellow of the opposite side. Its contents, being liquid, are less septic than either the middle or the left division of the colon, and its removal is compensated for by either the distal ileum or that portion of the large bowel into which the anastomosis is made. Its lymphatic supply is scanty and connected mostly with its outer surface, and its blood supply is so constant that, both from the standpoint of operative success and from that of freedom from recurrence, the right colon offers an exceptionally satisfactory outlook.

The middle third of the large bowel, although freely movable and easy of approach surgically, possesses an unsatisfactory blood supply and a free lymphatic drainage; and, while its resection is simple, the methods of reestablishing the continuity of the bowel lumen are necessarily more complicated because of this uncertainty of blood supply or because of the bowel substance sacrificed. The attachment of the great omentum to this portion of the bowel, although a defensive mechanism in an inflammatory disease, is an additional hazard when its removal is necessary for malignancy.

The distal colon possesses a short mesentery throughout its entire course, with the single exception of the sigmoid flexure, a richer lymphatic supply than the right half, and a not too constant blood supply. Throughout the distal two thirds of the large bowel, the blood supply is so distributed that the branches of the vessels do not always overlap, and consequently reestablishment of the bowel lumen at a single stage operation is frequently hazardous.

In reporting a large series of resections of the colon for cancer recently, Judd [1] found that the incidence was: cecum and ascending colon, 159; hepatic flexure, 29; splenic flexure, 24; descending colon, 46; transverse colon, 75, and sigmoid flexure, 292. The two most mobile portions of the colon, the cecum and the sigmoid, are thus seen to be the most frequent sites of cancer.

Immediate mortality from operations on the colon for cancer comes almost entirely from infection. Peritonitis may occur from contamination at the time of the operation or from leakage at the suture line during the first week of convalescence. Should the contamination be widespread, and the infection virulent, mortality is rapid and high; but not infrequently, in late leakage, abcess formation takes place and may be drained successfully.

The aseptic methods of restoration of the lumen of the bowel, which have been worked out by numerous operators, unquestionably are advantageous; but the fact remains that factors other than operative technic are equally important. Leakage from the line of suture, from whatever technic employed, occurs from either

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Judd, E. S.: A Consideration of the Lesions of the Colon Treated Surgically, South. M. J. 17:75 (Feb.) 1924.

faulty blood supply at the line of anastomosis or from infection in the fat of the mesentery, which may spread posteriorly or necrose into the line of suture and cause leakage and local abscess formation.

Lowered resistance, and particularly obstruction, influence markedly the tissues' power of healing. Dehydration, intoxication and anemia play a large part in operative mortality, but I believe that obstruction, if present even in small degree, influences mortality more than any one factor. Obstruction occurs either as an acute or as a chronic process. Chronic colonic obstruction of sufficient intensity to produce symptoms of recurrent attacks characterized by colicky pains, nausea and vomiting occurred in 40 per cent. of a series of cases of cancer of the colon reported by Miller [2] recently. Acute obstruction, while occurring less frequently, is reported by Burgess [3] as being found in 35.6 per cent. of the cases of acute intestinal obstruction, which were associated with malignant growths of the large bowel. More frequent occurrence of the growth in the left colon accounts for his statement that, "if the obstruction can be localized to the colon but its actual site remains undetermined, excluding hernia and intussusception, there is a 9 to 1 chance of the cause being a malignant growth and a 6 to 1 change of its being situated on the left side." The mortality in this series of acute obstructions of the colon due to malignancy was 29 per cent. when colostomy alone was done following an exploratory laparotomy, and 32 per cent. when cecostomy alone was done. The prohibitive mortality of 85.7 per cent. was noted in primary resection of the bowel excluding the cecum. Chronic obstruction, as well as acute, occurs most frequently in the distal colon. Most carcinomas beginning at the mesenteric border cause obstruction by degeneration and constriction. Annular carcinoma is present in only one growth in four in the colon, but frequently constrictions due to scar tissue formation resemble this type of growth. Obstruction increases the intracolonic pressure and produces both local and general reactions. The bowel at the point of the obstruction becomes thick and edematous, and consequently ill suited to a major surgical procedure in a single stage. Even a moderate degree of obstruction increases the danger of perforation following resection. The bacterial flora normally present becomes most active under obstructive condition, and in devitalized and dehydrated persons, whose already lowered resistance is severely taxed, any infection, even of a low grade, is liable to result fatally.

Coupled with obstruction, anemia, particularly in growths of the right colon, is apt to be one of the most prominent clinical features. Cancer of the cecum not infrequently is accompanied by a reduction of hemoglobin to 25 or 30 per cent., with a most noticeable lack of clinical symptoms in proportion to the anemia. A carcinoma of the stomach with this low hemoglobin is almost a prohibitive risk without preoperative measures being taken to combat it. However, in cecal cancer, it is rarely necessary to employ blood transfusion in this connection, and we have resected a number of times in the face of this low hemoglobin estimate, without regret. The exact explanation of this anemia in association with the right colonic growth has not been satisfactorily worked out. The anemia usually is in direct ratio to the size of the growth, and ulceration seems to have little or no relation. It is probable that the absorptive function of the mucous membrane of the bowel is so impaired by the toxemia resulting from its obstruction that a severe secondary anemia is produced.

Glandular involvement in cancer of the large bowel in 100 cases reported by Hayes [4] was found to occur most frequently in the sigmoid flexure, and in the other divisions in the following order: descending colon, transverse colon, hepatic flexure, and least frequently in the ascending colon and cecum. In every one of these growths, which originated in the large intestine, the type of tumor found was adenocarcinoma. The infrequent or slow glandular involvement from growths in the right colon emphasizes the fact that in this segment the most favorable end-results will be found. Craig,[5] in studying glandular involvement in carcinoma of the cecum, found a predominant invasion of the posterior ileocolic chain of glands, 64 per cent. of metastasis being in this group. Cases of low malignancy clinically were found to contain local glands larger and more numerous than the more highly malignant cases showing metastatic involvement.

In the absence of demonstrable metastasis, the question of operability of the growth on exploration is largely an individual one. It has been found that with a movable growth the operative mortality is low and the percentage of five year cures is high, yet any attempt to extend the limit of operability doubles or trebles the mortality with a corresponding decrease in the percentage of permanent cures. When studied, however, in the light of the entire group of cases, more patients per hundred will be found to be actually cured.

Local attachment and invasion of the adjacent viscera, which sometimes must be sacrificed, influence in a large measure the type of surgical procedure to be employed. In low growths of the left colon which are attached to the uterus or the ovaries, a hysterectomy in addition to the resection raises the mortality somewhat, but is justified by the end-results. Attachment of the small bowel to a colonic growth is not necessarily a contraindication to removal, although multiple resections involve higher percentages of fatality. Occasionally the ureter will be found to be so involved in malignancy that its sacrifice is essential. Resection and ligation of the ureter, provided the kidney on that side is uninfected, are not attended by unpleasant sequelae. The ligation should be made with silk, because catgut absorbs not infrequently before the kidney substance atrophies, and in consequence a urinary fistula may result.

The Mayo Clinic statistics on 493 resections of the large bowel showed an average mortality of 16.2 per cent. from all types of operative procedure on the left side of the colon. The mortality up to 1915 was 17 per cent. in operations on the left side, while in operations of the right colon was 12.5 per cent. The mortality in operations of the left colon, brought up to 1922, shows a decrease of 2 per cent. in mortality, including all types of operations. This reduction has largely been accomplished through a graded operation in a vast majority of the growths of the distal colon. In thirty-three cases of two-stage operations—colostomy followed by resection—there were four deaths, a percentage of 12+. Jones [6] of Boston, in reporting the end-results of a series of operations on carcinoma of the colon, has an average mortality of 13 per cent. This includes both colostomy and exploratory operations. Sixty-one per cent. of his patients were living at the end of three

2. Miller, R. T.: Cancer of the Colon, Ann. Surg. **78**: 209 (Aug.) 1923.
3. Burgess, A. H.: The Treatment of Obstruction of the Colon, Brit. M. J. **2**: 547 (Sept.) 1923.
4. Hayes, J. M.: The Involvement of the Lymph Glands in Carcinoma of the Large Intestine, Minnesota Med. **4**: 653 (Nov.) 1921.
5. Craig, W. M., and MacCarty, W. C.: Involvement of the Lymph Glands in Cancer of the Cecum, Ann. Surg. **77**: 698 (June) 1923.
6. Jones, D. F.: Personal communication to the author.

years, and 41 per cent. at the end of five years. It is interesting to note the high percentage of fatalities occurring after exploratory and palliative operations. The exploratory procedures alone show a gross mortality of 16.9 per cent., which is higher than resection in favorable cases in any division of the large bowel.

The right division of the colon around to the middle of the transverse segment, with few exceptions, is best removed in one stage. Its anatomic arrangement permits a satisfactory mobilization, and its removal is followed by recurrences in fewer instances than any other intestinal cancer. Approximately one third of the cancers of the large bowel are in this section. In 1923, I [7] reported 150 operations for resection of the right colon, done at the Mayo Clinic in a series of 1,273 cases of cancer of the large bowel, including the rectum. Of these, 102 were in the cecum; thirty, in the ascending colon; fifteen, in the hepatic flexure, and three, at the juncture of the hepatic flexure with the transverse colon. Of these 150 cases, data were complete in 133; sixty-two patients, or 47 per cent., were living three years after operation. Thirty of these patients were living from five to ten years after operation, and thirteen, from ten to fifteen years after operation. There were seventy-six deaths in this series. The types of operation were resection with end-to-end anastomosis; resection with end-to-side anastomosis with a button for intestinal anastomosis, and in a few of the earlier cases, resection and side-to-side anastomosis. The latter type of operation has been practically abandoned in recent years. Mobilization of the right colon is usually satisfactorily carried out, provided a type of "digging" operation is not attempted. Two points of suspension are selected—one the head of the cecum, and the other that point on the transverse colon where the anastomosis to the ileum is to be made. It is not incompatible with good results in some cases, in the absence of demonstrable metastases, to resect a growth that is attached to the abdominal parietes or to the muscles of the lateral abdominal wall. The right half of the colon, in its rotation around the superior mesenteric artery and its descent into the right iliac fossa, has elongated its mesentery, which on its outer side is continuous with the parietal peritoneum, and contains no blood vessels. A division of this peritoneal fold permits one to roll inward to the middle line the bowel to be sacrificed, and the dissection, which at this point is preferably done with gauze, permits one to bring out the retroperitoneal fat and lymphatic glands that drain this region. Care should be taken to avoid injury to the retroperitoneal duodenum when the upper angle of the right colon is mobilized. The restoration of the continuity of the lumen following removal of this segment may be accomplished by open end-to-end anastomosis between the ileum and the colon or by end-to-side anatomosis.

The former type of technic is the one we have employed most frequently, using the two layers of tannic acid catgut in the anastomosis. The first suture unites the mucous coats of the bowel, the second layer approximating the serosa. The lumen of the bowel is held open by the blind introduction of the thumb and forefinger after the mucous stitch has been put in.

The Parker-Kerr technic of aseptic anastomosis is, I believe, an ideal method. I have had no experience with this technic in colonic resections, but its adaptability is unquestionable and it is susceptible of modification which will render it acceptable in most cases. In the hands of Kerr,[8] Horsley [9] and others, it has proved most satisfactory. It has the distinct advantage of requiring no particular type of instrument, but can be completed with ordinary clamps. To supplement this aseptic method of resection and anastomosis with an enterostomy in the small bowel as a safeguard against gas distention seems feasible. Horsley has employed this additional maneuver in a short series of cases, with satisfaction. The end-to-side anastomosis may be accomplished either by the Parker-Kerr or by the button technic of C. H. Mayo.[10] Mayo brings the end of the colon up to the peritoneum, and leaves the catgut inverting suture protruding from the wound, thus making a way for a safety valve in case gas formation and distention occur. It has been our custom, following all resection of the right colon, to provide an enterostomy in the ileum about 15 inches above the anastomosis. This procedure, carried out after the Witzel technic, is most comforting and precludes any discomfort from gas disturbance. It is necessary in only about one out of three cases to open the enterostomy tube. The tube drops out of its own accord about the fifteenth or eighteenth day, and in no instance have we seen a fecal fistula persist. It is essential that a small caliber catheter be used in this maneuver. It is usually possible in right colonic resections to cover over the raw surface made in the dissection with a peritoneal flap saved during the mobilization.

The middle third of the colon, despite its ease of mobilization, is removed with a high mortality, if the resection and anastomosis are done in one stage. Miller found in his series of colon cancers that the highest percentage of mortality came from lateral anastomosis following resection of the midportion of the colon. Although obstruction is less likely to occur in this segment than lower down in the bowel, a graded operation seems most feasible. Here and in the sigmoid have been the sites of election for the Mikulicz procedure. This operation is not uncomplicated in the transverse colon, because of the necessity of removal of the omentum. In any section of the colon in which a Mikulicz operation is done, fat tags must be removed because of the early sloughing and a resulting foul smelling, draining mass. The original procedure consisted in bringing out the loop of the bowel without division of its blood and consequently without removal of the gland-bearing area in the mesentery. To ligate the blood supply of a loop of the bowel, which is left out on the abdomen, in many instances, is to invite necrosis; and in anemic patients with a retarded power of tissue healing, puncture of a loop of the bowel, or its removal forty-eight or seventy-two hours later, is occasionally followed by infection and peritonitis. It has been observed that the loop sometimes retracts as late as seventy-two hours after the first procedure, if the patient is particularly anemic and ill nourished.

Recurrence in the abdominal wall in 7 per cent. of the cases takes place after the Mikulicz procedure is carried out. This is occasioned by direct cell implantation in the open wound, despite attempts at walling off with petrolatum gauze or other appliances. When the loop is resected, one not infrequently finds that instead of having from 1 inch to 2 inches of clear bowel above the line of resection, as was planned at the first

7. Rankin, F. W., and Scholl, A. J.: Resection of the Proximal Colon for Malignancy, Arch. Surg. 7: 258-279 (Sept.) 1923.

8. Kerr, H. H.: The Development of Intestinal Surgery, J. A. M. A. 81: 641-646 (Aug. 25) 1923.

9. Horsley, J. S.: Surgery of the Intestine, J. A. M. A. 82: 1159 (April 12) 1924.

10. Mayo, C. H.: A Consideration of Cancer of the Large Bowel, read before the Brooklyn Surgical Society, 1917.

stage, the mass has shrunk and settled until division must be made much closer to the growth than was anticipated. Removal of the growth at one stage between clamps, which are left in place, has been practiced frequently as an emergency measure in cases in which removal seemed advisable because of the lack of evidence of metastases and yet the technical difficulties were great. This procedure has been carried out in twenty-nine cases at the Mayo Clinic, with seven deaths, which would give a prohibitive mortality were it viewed without analysis of the type of case in which it was employed. Only three of these patients, however, died from peritonitis or infection, which reduces the mortality more than one half; and when it is considered that the procedure was applied to cases as a last resort, it seems reasonable to conclude that the test has not been a fair one for the operation. I have recently done this operation in two cases in the transverse colon as an operation of election, supplementing the resection with an ileostomy for drainage, and completing the Mikulicz procedure as in the original plan. In this manner one is able to be sure that the blood supply is sufficient and, in addition to this, to do a complete gland dissection and removal in a short period of time. The enterostomy provides against intoxication, which otherwise would be caused by the obstruction produced by leaving the clamps on. This procedure avoids the likelihood of wound recurrence and, I believe, is applicable to cases in which the obstruction is not too marked and the attendant toxemia not grave.

The transverse colon and the sigmoid flexure are the two sites of election for this type of procedure. When the mortality of 9.6 per cent. is recalled in the Mikulicz procedure, which does not arrange for gland dissection but which recommends itself mostly in cases of movable tumors situated in the sigmoid flexure, in which the glandular metastasis is more likely to occur than in any portion of the colon, it seems strongly possible that some other procedure than merely bringing out the loop of the bowel is indicated. The original mortality of the Mikulicz procedure plus the recurrence in the bowel itself and the abdominal wall is greater than the immediate mortality in graded operations, which offer a more favorable end-result because of their more radical technic.

Graded operations in the distal two thirds have advantages which, despite the prolongation of the convalescence, renders them more acceptable because of a lowered immediate mortality, without decreasing the chances for permanent cure. A reduction of 5 per cent. in the operative mortality is of itself an unquestioned advantage, and since this type of procedure permits of an even more radical secondary operation, there is reason for optimism in the expectation of better end-results. Styles has long been an advocate of a many stage procedure in colonic growths, and Jones is emphatic in his approval of graded operations beyond the right half of the colon. Both approve cecostomy as a preliminary measure, rather than colostomy.

Whether one uses cecostomy or colostomy, the result is much the same. Cecostomy has the advantage of placing the artificial anus farther away from the secondary incision. Colostomy through the left rectus muscle opposite the umbilicus or a little below gives a very satisfactory result. The bowel should be brought out close enough to the midline to leave a wide space laterally, which precludes the possibility of intestinal obstruction from a loop slipping behind the colon. When the colostomy is opened, it is available for irrigation for both the distal and the proximal loop of the bowel. This reduces the infection in the distal loop, which is to be removed, and at the same time permits the patient to be built up generally for a second more radical procedure. If the left rectus colostomy has been employed, the secondary incision should be made to its outside, since it will be found more difficult to do the resection through the midline of the abdomen. Drainage should usually be employed in the second stage, since sometimes abscess formation takes place. The reestablishment of the bowel lumen is usually easily accomplished by end-to-end anastomosis with suture and without the use of an obturator. Very low growths near the rectosigmoid junction may be safely excised in this manner through the abdomen.

ABSTRACT OF DISCUSSION

DR. E. STARR JUDD, Rochester, Minn.: The immediate results from operating for cancer of the colon have been rather unsatisfactory, and the mortality is altogether too high. On the other hand, the ultimate results in patients surviving operation have been very satisfactory as compared with operation for cancer in other regions, so that, if we can develop some standard technic for the operation of cancer of the colon, the ultimate results will be very successful. We have at our disposal several types of operation. The ideal operation is resection in one stage with anastomosis. I fear, however, that we have attempted to do that in too large a percentage of cases. In the right colon it is very satisfactory. If the entire ileocecal valve can be removed and the ileum anastomosed to the ascending colon, the results are very good. When we come to the transverse colon and the descending colon, other problems must be met. Technically, it is just as easy to do a one-stage resection in the descending colon as in the ascending colon, but the problem, as I see it, is that we are unable to estimate the exact distribution of the circulation in the descending colon. I have had cases in which we were able to do a very satisfactory operation; the growth came out easily; we were able to make a satisfactory anastomosis, and yet at the end of a few days a definite breaking down of the suture line occurred. If we were able to examine the colon at that time, we found definitely one half or more of the limbs of the colon gangrenous, apparently from interference with the circulation. We do not have to take that into consideration in resection of the stomach. We can take any quadrant or any area of the stomach and suture it together in any fashion, and we can be absolutely certain that the blood and nerve supply will be sufficient to carry on healing. I believe that this is the one place in the body, the descending colon, where necrosis from obstruction of the circulation is apt to occur. Our results are better since we have practically adopted the plan of doing a preliminary colostomy in all cases in which we propose to do a resection. I say "all" cases because it applies in diverticulitis cases as well as in cancer cases. Colostomy is better than cecostomy, because it deviates the entire fecal stream from the operative field. The ultimate results will be better than in cases in which we do a preliminary cecostomy. After the colostomy has been established and the field opened, I think it is better to drop the colon back than to do a resection. I am quite sure that that has reduced the number of cases of infection. Dr. Rankin spoke especially about the modification of the Mikulicz operation in which the growth is taken out at the time and the clamps left on the two limbs of the colon. We have done that two or three times, and it has been satisfactory in most cases. Of course, if by chance a large vessed in the mesentery of the colon is ligated, the growth and the bowel around it are bound to slough. That may bring on serious troubles. Again, if one puts pressure on the clamps and takes out that part of the bowel, one is less apt to have sloughing; but, at the same time, one is not sure that the proximal limb back of the clamp may not slough and give serious difficulty. When Dr. Rankin was working with me, we devised a scheme of doing an ileostomy

in practically all these extensive resections of the colon. It is perfectly safe. After the resection is completed, a small opening like the point of a knife is made in the ileum above the point of resection and a catheter slipped in, just as in the Witzel operation. Then a clamp is put on the catheter. If there is any distention, the clamp is left on. If, on the other hand, a good deal of gas is collecting or if the patient is vomiting, then the clamp is opened and the catheter pushed up to start a little drainage. We feel that we have saved some patients and that they have had a much more comfortable convalescence.

DR. ARTHUR DEAN BEVAN, Chicago: Many of these cases are not discovered early enough. If they are discovered early enough and properly handled the prognosis is excellent, and, as Dr. Rankin said, there is a very definite probability of a permanent cure. Whenever a patient has bleeding from the rectum, an exhaustive study should be made of that case. There is the possibility that it may be a carcinoma of the colon. I have seen many cases that have not been recognized early because of the lack of proper routine examination —proper routine examination with barium injection of the colon or, what in many cases is better, a barium meal from above and a study of the picture of the colon. There is another type of case which, of course, has not been mentioned here which I should like to emphasize, first because of the fact that these cases are not discovered early enough; many of these patients are brought to us with a rather extreme degree of obstruction. These patients are literally blown up with intestinal obstruction, and something must be done immediately. The history is not very clear, and the condition is so extreme that we have not the opportunity for exhaustive study. It is an emergency that must be treated. I have treated most of these emergencies by doing a right sided colostomy under local anesthesia, or, what is better, a right sided colostomy done after infiltrating the line of the muscle-splitting incision, like an appendix incision, dividing the structures of the abdomen in that locality and then adding some ethylene-oxygen or gas-oxygen for a complete exploration of the abdomen to determine the location of the lesion. I agree with Dr. Judd and with Dr. Rankin in regard to this type of case. In almost all these cases of carcinoma of the colon, the important thing is a preliminary colostomy of some type. We have been using a very simple method in those cases—a single button suture, which answers admirably. It is very simple and very effective. Adding to that the introduction into the proximal end of the colon of a good size rubber tube by the Witzel method, immediately after the colostomy is done, the patient has relief from the passing of gas.

DR. CARL B. DAVIS, Chicago: Obstruction is the biggest element in carcinoma of the colon. We do not see the patient early, because the patient knows nothing of his condition. If the carcinoma is located in the rectum, it is sometimes months before the patient goes to a competent medical man or surgeon for a diagnosis. The higher the tumor is located in the colon, the more difficult it is for the diagnosis to be made early, because the tumor sloughs and the discharges are mixed with the feces in the colon. Frequently, on gross examination, no blood or pus is found in the discharge. Often it is the obstruction that brings the patient to the physician for the first time. Obstruction or postoperative ileus plays an important part in many cases following operation. This has been treated by various types of opening in the small and large intestine. Usually an opening in the large bowel is more efficient in protecting the line of suture than is an ileostomy. In many cases we are too greatly disturbed in finding a mass of enlarged glands proximal to the tumor mass. These glands, however, are not always malignant. Inflammatory reaction is quite capable of giving an enormous mass of enlarged glands proximal to the bowel, with secondary enlargement of the glands as far as the aorta. It is only by microscopic section that we can be certain as to the character of the enlargement. Regarding the Mikulicz procedure, we should regard it as the ideal operative method for palliative treatment. When the bowel is freely movable, with absolutely no involvement of the glands, then we are free to accept the Mikulicz procedure as the best treatment; but when the glands are involved, the Mikulicz operation approaches merely a palliation and should not be classed as a radical affair. Most surgeons have accepted the doctrine of doing a preliminary colostomy or ileostomy, to be followed by resection. These tumors are readily diagnosed by the use of an opaque enema passed into the bowel under fluoroscopic control. At times the barium content of the barium meal backs up behind the tumor, interfering with the postoperative escape of gas.

DR. FRED W. RANKIN, Lexington, Ky.: I want to agree most heartily with Dr. Davis that in the vast majority of colon cancers the Mikulicz procedure is only a palliative operation. As originally done, the Mikulicz operation provided no attempt at a gland dissection, and the blood supply to the loop of the bowel outside the abdominal wall was not ligated. If one ligates the blood supply of a loop of bowel that is brought outside the abdomen, almost invariably within forty-eight hours there is a foul smelling necrotic mass, particularly if also the fat tags have not been removed. Not infrequently, perforation and sloughing take place, with a resulting peritonitis. In 183 cases done by the Mikulicz procedure, with or without ligation of the blood supply, the mortality was 9.6 per cent. This is only 3 per cent. under the present mortality from radical operation with gland dissection. In addition to the retroperitoneal recurrence, the Mikulicz procedure shows a recurrence in fourteen cases, or 7 per cent., in the abdominal wall itself; also, one will find that, when the second stage is to be done, the bowel that has been left out has settled and that one resects from one-half to an inch closer to the malignancy than was originally intended. I think that the question of obstruction before operation is an index to the type of operation one is going to undertake, almost invariably. After resection is complete, relief of intracolonic pressure by some procedure, either colostomy or enterostomy, is most highly essential.

SUBCOSTAL NEURITIS AS A CAUSE OF ABDOMINAL PAIN *

MARSHALL CLINTON, M.D.
BUFFALO

The condition to which I am calling attention is a clinical entity that seems to be generally unrecognized, though it is of fairly common occurrence and is of practical importance.

Traumatic neuritis may be produced by a single or repeated injury to a nerve trunk, and the condition that I present belongs to the latter group. The intercostal nerves are shielded from injury by intact ribs except when they pass beyond the tips of the last few ribs. At this point, the eleventh and twelfth especially, may be injured in various ways. The commonest method of nerve injury to these last two nerve trunks is by the repeated squeezing of the nerve between the tips of the ribs and the wing of the pelvis. This repeated trauma is seen in short waisted persons or in those who have an unusually long eleventh or twelfth rib.

The pain is of a characteristic "toothache" type and has no relation to the gastro-intestinal tract. As it occurs in right handed persons most often on the right side, as a result of stooping over, an appendectomy scar is a common accompaniment. Blood, urologic and gastro-intestinal examinations are negative, except that the roentgen-ray report often finds a slowly emptying appendix, which is followed by operation, and a recur-

* Read before the Section on Surgery, General and Abdominal, at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

rence of pain when the patient resumes his ordinary mode of life. Any surgical procedure will cure temporarily, for as long as the patient remains flat in bed he has no pain. The pain always comes on after he rises in the morning and bends over. Complaint of pain starting in the morning when the patient leans over the wash bowl is characteristic. The wearing of corsets does not seem to make any difference. Pressure *under* the tip of the twelfth or the eleventh rib does make a difference, for if the patient has this condition, the pressure of the finger will be unbearable. I have never seen this condition in the young—the youngest patient is over 20. Between 30 and 40 is the commonest age. The pain may be produced by seating the patient in a chair and bending the patient to one side, then forward and to the other side, which will start the pain as soon as the rib tip impinges on the edge of the wing of the pelvis. Straightening up relieves the pain.

The relief is simple and immediate. The end of the offending rib should be resected for an inch, and with it the underlying nerve trunk.

The pathology is definite. Gross specimens show a neuroma-like swelling in the nerve trunk at the point of injury, and very frequently there is a small mass of fibrous tissue in which the nerve trunk is embedded or to which it is attached, and this fibrous tissue mass is always attached to the tip of the rib.

Dr. J. C. Sullivan of Buffalo has given the name of "subcostalgia" to this lesion. With correct diagnosis and proper operation, the cure of this pain is immediate and permanent.

135 Linwood Avenue.

ABSTRACT OF DISCUSSION

DR. LEWIS H. MCKINNIE, Colorado Springs, Colo.: Dr. Clinton has given us a clinical entity that opens up quite an extensive field in the matter of reflexes causing abdominal pain. I cannot discuss this particular condition intelligently, because I have never recognized a case. I may have seen them but not recognized them. A great many tuberculous patients are sent to Colorado Springs, and it is an indictment against the diagnostic ability of many surgeons that a great number of the young adults who come to us have had their appendixes removed. In going into their histories, we find that the earlier symptoms have been gastro-intestinal, and that the patients consulted some surgeon or medical man, and, without a complete or thorough lung examination were subjected to an operation for appendicitis. Naturally, the patient will be relieved for a time as a result of the rest in bed, but on resuming his occupation, the pain recurs and, within a year, we find him in Colorado or some other health resort with early or late tuberculosis. These histories practically always show that the appendicitis was chronic, not acute. I bring this up to warn those that are not familiar with this condition to look to the chest. No surgeon in the West, or in that portion of the West where I live, when called on to pass judgment in a chronic abdominal case, fails before operating to examine thoroughly, or have examined thoroughly, the chest. As to the reflex question, I wish Dr. Clinton had gone more into detail as to the true abdominal symptoms of this entity. I do not believe we know just what that reflex is, but it certainly has to go to the spinal cord, and, in some of the reflexes, back of the irritation to the spinal cord is a relation to some abdominal tenderness.

DR. A. J. CARLSON, Chicago: There may be gastro-intestinal motor disturbances from chronic pressure or other forms of stimulation of spinal and visceral nerves. In the experimental animal we see many types of abnormalities in gastro-intestinal motility from sensory nerve stimulation, provided the stimulation is sufficiently strong, or, as in this case, the nerves are hyperirritable through chronic irritation.

DR. W. R. CUBBINS, Chicago: My experience in this type of syndrome is limited to two cases. In one case, a rather marked scoliosis was associated with pain in the right side, which seemed to me to be caused by the impingement of the twelfth rib on the crest of the ilium. As we could find no visceral pathologic changes, we removed this rib, with the the complete relief of symptoms. He has been well without recurrence of symptoms for five years. The other patient was a woman who had had a cholecystectomy and appendectomy without being relieved. She also presented a slight scoliosis, and apparently her twelfth rib was impinging on the crest of the ilium. This was removed under a local anesthetic, and the pain and discomfort were relieved. As yet I have not resected the nerve, but can easily see how the repeated trauma of the rib on the nerve trunk could cause neuroma of the type described by Dr. Clinton.

DR. MARSHALL CLINTON, Buffalo: One of the characteristic stories given by a patient with a typical case of subcostalgia is that there is pain on being up and around, but none when lying down. The roentgen ray usually shows a chronic appendicitis even when there have not been any symptoms. Of course, there is always the possibility of having some gastro-intestinal symptoms, but the one outstanding symptom is excruciating pain. Dr. Cubbin said he had seen two cases, and had removed the tip of the rib. I want to emphasize this. One should be sure to get part of the nerve trunk as well as the rib, because, otherwise, one will not cure some patients, for that pathologic entity, the nerve trunk, has been left behind.

HYPOGLYCEMIA AND ACIDOSIS*

FRITZ B. TALBOT, M.D.
EDWARD B. SHAW, M.D.
AND
MARGARET E. MORIARTY, S.B.
BOSTON

Recent advances in the field of biologic chemistry have thrown new lights on clinical pediatrics, and, during the last few years, have modified the conception of the clinical entity, acidosis in childhood. Howland and Marriott,[1] in 1916, drew attention to the fact that in severe acidosis the alkali reserve of the body was greatly lowered. Later, Gamble, Ross and Tisdall[2] showed that the alkali reserve in the blood of fasting children was lowered "in consequence of the unusually large concentration of organic acids in the blood plasma." It thus became apparent that a lowered alkali reserve or blood bicarbonate resulted from excessive formation of ketone acids.

It has long been recognized that the ketones result from incomplete combustion of fats, and that a certain minimum amount of carbohydrate must be present before complete oxidation can take place. Our attention was therefore directed toward the sugar in the blood and its relation to the acidosis that we found during starvation. This communication will deal with only those blood findings which are directly connected with the acidosis.

The material used in this study was obtained from a series of eight therapeutic fasts carried on for periods varying from six to fourteen days on five patients.

* From the children's medical department, Massachusetts General Hospital.

* This paper is No. 26 of a series of studies in metabolism from the Medical School of Harvard University and allied hospitals. The expenses of this investigation have been defrayed in part by a grant from the Proctor Fund of the Medical School of Harvard University for the study of chronic diseases.

1. Howland, John; and Marriott, W. M.: Acidosis Occurring in Severe Diarrhea, Am. J. Dis. Child. **11**: 309 (May) 1916.

2. Gamble, Ross and Tisdall: Study of Acidosis Due to Ketone Acids, Tr. Am. Ped. Soc. **34**: 289, 1922.

These children, from 8 to 13 years of age, were of apparent normal physical development. They were fasted as a treatment of "idiopathic epilepsy." Complete reports of the chemical examinations of the blood and urine in these cases are given in other communications.[3]

Although these determinations were made during the fasting of epileptic children, we believe that the results are typical of fast during normal childhood.

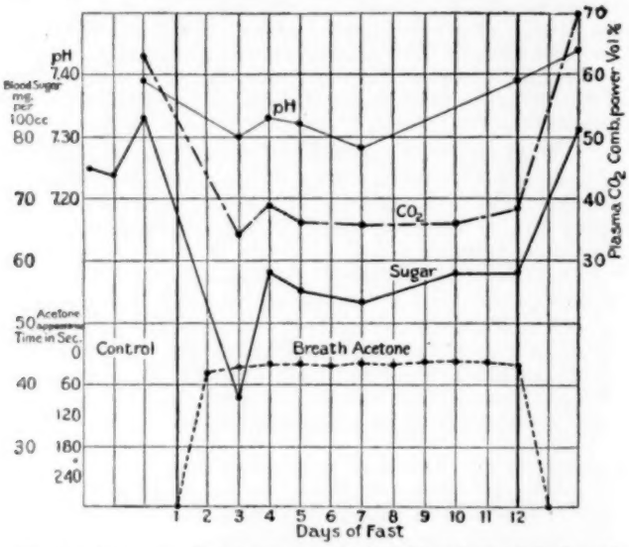

Chart 1 (Case 1).—Blood sugar, carbon dioxid and p_H of J. B.; relative breath acetone excretion of the control periods before fast; findings during the twelve days of fast, and findings after the fast was broken. Heavy lines indicate when the fast was begun and ended. Actual fast started twelve hours earlier than figures indicate.

The findings in the three cases presented in the accompanying charts are characteristic of the results obtained in this series of cases, and show changes in blood p_H, in carbon dioxid combining power, in blood sugar concentration, and in breath acetone. The excretion of acetone bodies in the urine paralleled that in the breath.

At the beginning of the fast, the blood sugar concentration in Case 1 was 83 mg. per hundred cubic centimeters of blood. On the morning of the third day of the fast, the level of the blood sugar had fallen to 38 mg. This fall in the blood sugar was accompanied by a lowered alkali reserve and a lowered p_H of the blood, and an excretion of considerable acetone in the breath and urine. Coincident with this, the child appeared nervous and frightened, complained of oppression and pain in her chest and throat, and vomited several times. A small amount of sugar was given by mouth, with an immediate cessation of symptoms and rise in the blood sugar to 58 mg. per hundred cubic centimeters of blood.

In Case 2, the blood sugar level was relatively high at the beginning of the fast, which fell rapidly to 63 mg. on the third day, reaching the minimum of 48 mg. on the sixth day. At this time, the blood bicarbonate and p_H showed a slight relative acidosis. These changes, although definite, were not as marked as those found in Case 1. Ketones were excreted in the breath and the urine from the second day until the fast was ended.

In the fast that Patient 3 underwent, the blood sugar level fell from 91 to 47 mg. by the sixth day. The p_H of the blood and the excretion of breath and urine acetone were similar to that seen in the other cases.

The occurrence of a striking fall in the blood sugar concentration coincident with the acidosis has been emphasized for several reasons. It has been repeatedly stated that the blood sugar is constantly maintained at a normal level between 80 and 100 mg. per hundred cubic centimeters of blood. A search through the literature shows in fasting adults a normal blood sugar, which rarely falls to 70 mg. even though there is a decrease in the alkali reserve. The hypoglycemia after insulin is not comparable for many reasons with the hypoglycemia during the acidosis of fasting children.

Hypoglycemia had not been reported in childhood prior to these studies. The blood sugar concentrations here recorded show a marked decrease, being more than 50 per cent. below the normal. The lowest values in our cases were found from the third to the sixth day of fast. This indicates that the glycogen store, easily available for combustion, is more readily exhausted in the child than in the adult, and that the body is unable immediately to bring about a degree of compensation, by glucose synthesis, sufficient to maintain a normal blood sugar. Confirmatory evidence is found in the respiratory quotients during fasts in Cases 2 and 3.

Benedict and Talbot[4] found, in the new-born and during later infancy, that lack of food resulted in a respiratory quotient that indicated that the glycogen reserve was used up in less than twenty-four hours. This is supported by recent observations on infants who showed a definite hypoglycemia as early as fifteen hours after the last food was given.[5] It is apparent, then, that the younger the child the sooner hypoglycemia will appear.

It is important to note that despite the chemical evidence of hypoglycemia, clinical symptoms were absent in all our patients except one (Patient 1), in whom only slight symptoms were observed. It was

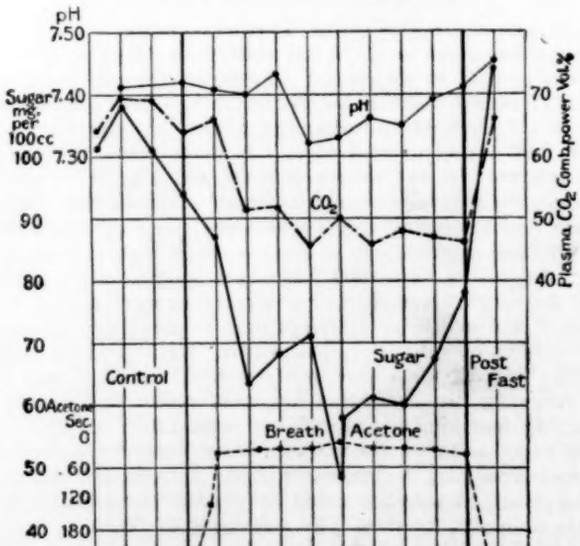

Chart 2 (Case 2).—Control findings, blood changes during fast, and findings twenty-four hours after fast was broken.

found, clinically, that so long as large amounts of water were ingested and excreted, there were few subjective symptoms; while, when the fluid intake was diminished materially, the patient became flushed, anxious, languid and "dopey," and complained of abdominal pain. These symptoms disappeared when fluid intake was increased.

3. Hoeffel, Gerald; and Moriarty, Margaret: The Effect of Fasting on the Metabolism of Epileptic Children, Am. J. Dis. Child., to be published. Shaw and Moriarty: To be published.

4. Benedict and Talbot: Carnegie Institute, Washington, Publications 201 and 233.

5. Rumpf: Jahrb. f. Kinderh. **105**: 321, 1924.

Dr. John Parsons,[6] in this clinic in 1920, found that "20 per cent. acetone injected into the rabbit in doses of from 1.5 to 4 c.c., depending on its weight, was sufficient to cause shock, and often death. If 5 c.c. of 20 per cent. glucose was given intravenously, it was generally sufficient to bring the rabbit out of shock almost immediately," and to cause all signs of acetone intoxication to disappear. The very rapid disappearance of

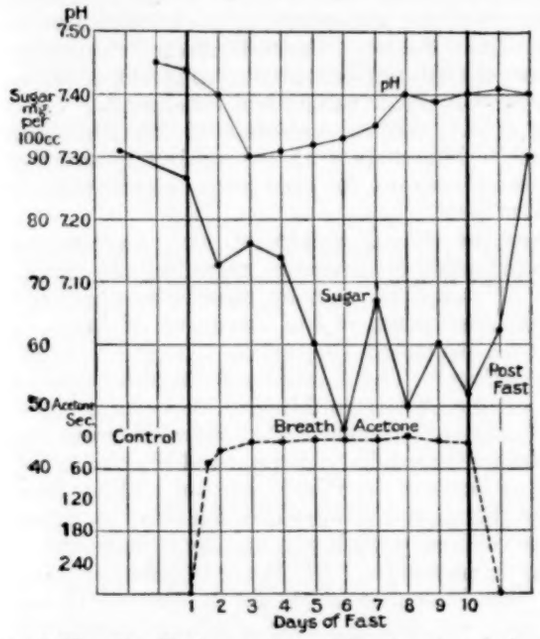

Chart 3 (Case 3).—Blood sugar, p_H, and breath acetone during fast.

the symptoms is evidence that, when sugar is introduced into the blood stream, it is immediately available to take part in the combustion of the ketones.

In our cases, when the fasts were broken, carbohydrate foods were given in all instances, and the chemical signs of acidosis rapidly disappeared. The charts show that, when the blood sugar rose to normal levels, the ketones disappeared from the breath [7] and the blood bicarbonate and p_H became normal. This carbohydrate feeding is similar to the procedure used in the treatment of acidosis in many clinics.

COMMENT

Although the data presented above are incomplete and are given as a preliminary report of investigations that are now in progress, they form the basis on which to build up the probable sequence of events, which is briefly outlined here. During health, the heat energy of the body is derived principally from the combustion of carbohydrate, and to a lesser degree from fat and protein. Under these conditions there is, of course, a great excess of antiketogenic material. During fast, however, as no carbohydrate is obtained from food, the store of available carbohydrate in the body is quickly exhausted. Confirmatory evidence of this is found in the low blood sugar concentrations reported above. The heat energy, then, must come from fat, and to a much less extent from protein. The balance is now thrown in the other direction, and there is a great excess of ketogenic material, which is not entirely compensated by the small amount of carbohydrate obtainable from the protein. There is, in consequence, a great production of ketones. The ketone acids then combine with the alkali of the blood and reduce the carbon dioxid combining power. This decrease in the alkali reserve is accompanied in our cases by a diminished alkalinity of the blood, as shown by the p_H. If this sequence of events is correct, then acidosis during fasting with nondiabetic children is due to a lack of available sugar, which is manifested by a low blood sugar content.

Although the material reported was obtained during voluntary fasts, the same conditions are present in involuntary fasts, such as are occasionally seen in prolonged vomiting, in cyclic vomiting, and at the onset of some of the acute infectious diseases, and after etherization. We believe that sufficient data are now available to state that one type of acidosis, that associated with starvation, is due to a deficit of available sugar in the blood.

CONCLUSIONS

A ketosis was found in eight fasts on five children. It was accompanied in all cases by low blood sugar concentrations, which were approximately 45 mg. per hundred cubic centimeters, but in one instance was 38 mg.

The foregoing evidence is given to show that acidosis during voluntary fasting and, therefore, during involuntary starvation is due to a diminished amount of available sugar in the body. The hypoglycemia found in these cases illustrates this. The quickly depleted glycogen reserve and the low blood sugar mean that a certain proportion of the fatty acids will not be completely oxidized. The ketone acids thus produced will combine with and deplete the alkali reserve. This is accompanied by a greater or less shift of the blood p_H toward the acid side.

Clinically, when a ketosis is found, it must be assumed that there is some interference either with the availability of the sugar or with the ability of the body to oxidize sugar. If the body is able to oxidize sugar, as is the condition with these fasting subjects, then the ketosis must be due either to a sugar deficit or else to a lowered availability of the sugar deposits of the body.

The low sugar concentrations found during fasting give the underlying reason for the efficiency of glucose in the treatment of acidosis. The administration of carbohydrate is seen to complete the combustion of the ketone bodies, thus freeing the body from an excess of acids. Clinically, the administration of glucose to a child with acidosis is usually all that is necessary to correct the symptoms of this condition, if the blood volume is kept up to normal.

Respiratory Quotients in Two Fasting Children

Case	Control			Days of Fast									
				1	2	3	4	5	6	7	8	9	10
2	0.87	....	0.85	0.78	0.81	0.75	....	0.77	....	0.69	0.70	0.67	....
3	....	....	....	0.79	....	....	0.70	....	0.70	....	0.71	....	....

The foregoing data suggest the possibility of considerable danger in the use of insulin in cases of acidosis during fasting.

270 Commonwealth Avenue.

6. Parsons, J. P.: Unpublished observations.
7. The sodium nitroprussid and ferric chlorid tests on the urine also became negative.

Successful Organotherapy.—There is a little or no hope for successful organotherapy in diseases due or supposed to be due to a primary hyperfunction of organs. There are at present no definite indications for organotherapy in disease due or rather supposed to be due to organ dystrophy; that is, a perverted or pathogenic secretion.—Carlson, A. J.: *Proc. Inst. Med. Chicago* **4**:199, 1923.

THE VALUE OF CAMPHOR-IN-OIL AS A CARDIAC STIMULANT *

H. M. MARVIN, M.D.
AND
J. D. SOIFER, M.D.
NEW HAVEN, CONN.

Although camphor has been employed in medicine for several centuries because of its reputed value as a circulatory stimulant, there is at present a wide diversity of opinion among clinical and laboratory workers regarding its method of action, toxicity and therapeutic value. So far as one may judge from current and recent medical literature and from conversations with practicing physicians, the drug appears to enjoy a unique favor among members of the medical profession; many of them regard it as the cardiac stimulant *par excellence*, the one drug to be given first in emergencies, the most reliable and speedy in its action under most circumstances, and the one to be exhibited with confidence after all other drugs have failed. It does not require a diligent search of medical literature to find numerous illustrations of these widely prevalent views; one can scarcely pick up a medical periodical without finding in several case reports the phrase: "in spite of the administration of camphor, the patient grew worse and died."

An attempt to find experimental or clinical evidence in support of this widespread confidence, however, leaves one puzzled to understand whence the drug gained its reputation. There has been a large amount of experimental work on lower animals, but the results have been so contradictory as to permit no conclusions. Heathcote,[1] in a review of the literature dealing with the action of camphor on the frog heart, points out that some observers find it to be a cardiac depressant, others conclude that it is a cardiac stimulant, while still others consider that it has no action on the normal heart but stimulates the heart that has been depressed by chloral. On the basis of the results of other workers and his own observations on the heart of the frog, rabbit and cat, Heathcote concludes that "there is no convincing pharmacologic evidence that camphor possesses any value whatever as a cardiac or circulatory stimulant. Its value, if any, for this purpose in man should be established or disproved by more exact clinical observations." Sollmann[2] also feels that no conclusions can be drawn from the experimental work on animals. He states that "the experimental effects of camphor on the circulation are inconstant, different investigators reporting divergent results and conclusions. Generally there is no definite response if the circulation is normal." His chapter on the subject contains extensive references to the literature, which will not be repeated here.

From the clinical standpoint, also, there appears to be considerable disagreement regarding the therapeutic value of camphor. Among those who consider it of definite importance in the treatment of heart failure might be mentioned Hosemann,[3] Zangger,[4] Schelcher[5] and Shelling.[6] The Council on Pharmacy and Chemistry of the American Medical Association[7] declares that "camphor stimulates the central nervous system, especially the medullary centers, and the circulation. It tends to increase the blood pressure. Many clinicians believe that camphor improves the pulse in impending cardiac collapse, probably by cardiac stimulation; others believe it ineffective." Osborne[8] feels very emphatically that "camphor is one of the best cardiac stimulants that we possess. It is a quickly acting nervous and circulatory stimulant, affecting principally the cerebrum, and causing dilatation of the peripheral vessels."

On the other hand, Cushny[9] is convinced that there is no reason to believe that camphor, in even the largest therapeutic doses, has any effect after absorption except to cause a slight dilatation of the skin vessels, and Sollmann[2] likewise feels that its effects, if they do occur, are inconstant and unreliable. Heard and

TABLE 1.—*Observations in Case 8* *

Time of Observation	Heart Rate	Respiration Rate	Blood Pressure: Systolic	Blood Pressure: Diastolic	Vital Capacity	Change in Symptoms
Before camphor	115	32	184	110	900	..
1st Dose						
5 minutes after	111	32	180	110	1,000	0
15 minutes after	107	28	180	110	1,175	0
30 minutes after	108	32	184	110	900	0
Before 2d dose	107	32	182	114	1,150	0
5 minutes after	104	32	190	114	900	0
15 minutes after	114	32	190	114	1,250	0
30 minutes after	110	28	186	114	1,100	0
Before 3d dose	117	32	192	114	900	0
5 minutes after	121	32	196	114	1,000	0
15 minutes after	114	32	192	114	.....	0
30 minutes after	119	32	190	112	1,100	0
4th dose	No observations					
Before 5th dose	117	32	206	110	1,075	0
5 minutes after	119	28	194	110	1,000	0
15 minutes after	119	32	196	118	1,100	0
30 minutes after	116	32	198	118	900	0
24 hours after	Condition subjectively worse					

* A housewife, aged 54; arteriosclerotic heart disease with auricular fibrillation, hypertension and congestive heart failure. Examination showed very large heart, marked dyspnea and orthopnea, moderate cyanosis, enlarged liver, bilateral hydrothorax, and general anasarca. Very little improvement from five days' rest in bed. Received five injections of camphor, 0.2 gm. each, without benefit. On the third day following she was given digitalis, with prompt symptomatic improvement and considerable diuresis. The electrocardiogram, before dosage, showed auricular fibrillation; there was no change after camphor was administered. The response to digitalis was excellent.

TABLE 2.—*Observations in Case 14* *

Time of Observation	Heart Rate	Respiration Rate	Blood Pressure: Systolic	Blood Pressure: Diastolic	Vital Capacity	Change in Symptoms
Before camphor	124	39	130	70	1,025	..
Single dose (45 grains)						
5 minutes after	132	36	126	72	1,450	Feeling
15 minutes after	126	38	130	68	1,500	of
30 minutes after	124	38	122	70	1,450	warmth
3 hours after	152	40	...	...	.....	Much
4 hours after	160	42	122	68	1,400	worse

* A Polish laborer, aged 47; rheumatic heart disease with stenosis and insufficiency of mitral and aortic valves, auricular fibrillation, and congestive heart failure. Examination showed considerable cardiac enlargement, cyanosis, marked dyspnea and orthopnea, engorgement of liver, râles at lung bases, and edema of lower extremities. No improvement from rest in bed. Received one dose of 3 gm. (45 grains) of camphor; six hours later, condition was so much worse that digitalis was started, with prompt and striking improvement. The electrocardiogram, before dosage, showed auricular fibrillation with ectopic beats; there was no change after camphor was administered. The response to digitalis was excellent.

* From the Department of Internal Medicine, Yale University School of Medicine, and the Medical Service of the New Haven Hospital.

1. Heathcote, R. St. A.: The Action of Camphor, Menthol and Thymol on the Circulation, J. Pharmacol. & Exper. Therap. **21**: 177 (April) 1923.
2. Sollmann, Torald: A Manual of Pharmacology, Ed. 2, Philadelphia, W. B. Saunders Company, 1922, p. 493.
3. Hosemann: Deutsch. med. Wchnschr. **42**: 1348 (Nov. 2) 1916.
4. Zangger: Lancet **1**: 143 (Jan. 26) 1918.
5. Schelcher: München. med. Wchnschr. **69**: 310 (March 3) 1922.
6. Shelling: Deutsch. med. Wchnschr. **49**: 1394 (Nov. 2) 1923.
7. Useful Drugs, Ed. 6, Chicago, American Medical Association, 1923, p. 50.
8. Osborne, O. T.: Disturbances of the Heart, Chicago, American Medical Association, 1916, p. 102.
9. Cushny: Pharmacology and Therapeutics, Ed. 7, Philadelphia, Lea & Febiger, 1918, p. 71.

Brooks,[10] after a careful study of the pulse rate and blood pressure in a series of normal persons, and patients with heart disease, concluded that camphor in oil injected subcutaneously in doses as high as 50 grains failed to produce any definite effects. Eggleston[11] states the feeling of many clinicians when he says that "camphor has no place whatever in the drug treatment of heart failure, as even in enormous doses it is devoid of direct stimulant action on the heart or circulatory system."

Because present opinions with regard to the effect of camphor on the cardiovascular system are contradictory, and because of the widespread use of the drug as an "emergency stimulant," this study was undertaken in an attempt to determine its action in patients with heart failure.

METHOD OF STUDY

Only those patients were selected for study who showed evidence of advanced congestive heart failure, as manifested by cyanosis, dyspnea, orthopnea, liver engorgement, fluid accumulations in the serous cavities, and edema. There was no selection on the basis of etiologic types of heart disease, and observations were made on patients with regular rhythm as well as on those who had auricular fibrillation or premature beats. These patients were placed at rest for as long a period as their condition allowed, and all medication withheld, in order that the influence of rest in bed might be determined before camphor was given. It was our desire to make this preliminary period at least five days, but in some instances it was impossible to delay active treatment for so long a time. However, only four of our fourteen patients had rest-periods of as little as two days; four of them remained without medication for more than two weeks, while the remaining six were kept at rest for periods of five or six days. After it was apparent that the general condition had become practically stationary or was becoming worse in spite of rest, careful observations were made which included:

(*a*) The rate of the heart, determined at apex and wrist if there was any irregularity, and the character of murmurs or arrhythmias.

(*b*) Blood pressure, recording the maximal beats in patients with auricular fibrillation.

(*c*) Vital capacity, as determined by the Sanborn spirometer. Three readings were taken at each observation, and the highest recorded.

(*d*) Rate and character of respirations.

(*e*) Electrocardiogram, Leads 1, 2 and 3.

(*f*) The general clinical condition of the patient, noting especially the degree of cyanosis, dyspnea and orthopnea, amount and extent of edema, pulmonary congestion, enlargement of liver, and chief subjective symptoms.

On completion of these preliminary observations, the administration of camphor was started. The preparation employed was that manufactured by Parke, Davis & Co., and marketed in sterile ampules for hypodermic use. It was given by injection into the deltoid or gluteal muscles, and the injections varied from 0.2 gm. (3 grains) to 3 gm. (45 grains) each. Whenever the minimal dose (0.2 gm.) was given, it was repeated at intervals of two hours until the patient had received a total of four or five. Immediately before, and at intervals of five, fifteen and thirty minutes after each injection, all the observations enumerated above were repeated. On several occasions when patients were receiving five small doses and their clinical condition was grave, observations after the fourth dose were omitted. All observations were repeated twenty-four hours after the beginning of camphor administration.

TABLE 3.—*Summary of Observations*

Case	Age	Sex*	Diagnosis	Rhythm	No. of Doses	Size of Each	Total Dosage	Effect	Response to Digitalis
1	30	♂	Rheumatic heart disease	Auricular fibrillation	4	0.2	0.8	None	Excellent
2	57	♂	Arteriosclerotic heart disease	Premature beats	4	0.2	0.8	None	None
3	49	♂	Syphilitic heart disease	Regular	4	0.2	0.8	None	Not given
4	60	♂	Arteriosclerotic heart disease	Premature beats	4	0.2	0.8	None	Excellent
5	30	♂	Rheumatic heart disease	Coupled	4	0.2	0.8	None	Not given
6	64	♂	Rheumatic heart disease	Auricular flutter	4	0.2	0.8	Grew worse	Slight
7	43	♀	Rheumatic heart disease	Regular	4	0.2	0.8	None	None
8	54	♀	Arteriosclerotic heart disease	Auricular fibrillation	5	0.2	1.0	Grew worse	Excellent
9	36	♀	Rheumatic heart disease	Regular	5	0.2	1.0	Grew worse	Slight
10	73	♀	Arteriosclerotic heart disease	Regular	3	0.2	0.6	None	Slight
11	50	♂	Arteriosclerotic heart disease	Auricular fibrillation	3	0.2	0.6	None	Excellent
12	75	♂	Arteriosclerotic heart disease	Auricular fibrillation	3	0.2	0.6	None	Excellent
13	33	♀	Rheumatic heart disease	Auricular fibrillation	1	2.4	2.4	None	Temporary
14	47	♂	Rheumatic heart disease	Auricular fibrillation	1	3.0	3.0	Grew worse	Excellent
				CONTROLS					
15	22	♂	No heart disease	Regular	1	2.4	2.4	None	Not given
16	24	♂	No heart disease	Regular	1	2.4	2.4	None	Not given

* In this column, ♂ indicates male; ♀, female.

An interval was then allowed to elapse before further treatment was instituted; this varied from several hours to twelve days, and ended when the patient could no longer be permitted to continue without appropriate medication. The patients, with two exceptions, were then digitalized, the dosage being calculated on the basis of body weight and the drug continued until definite therapeutic or toxic effects were noted. There was thus afforded an opportunity of comparing the action of camphor with that of digitalis in the same patients. In three instances it seemed necessary to give digitalis to patients with auricular fibrillation several hours, rather than several days, after camphor. We have included these cases because the advocates of camphor therapy claim for it a quick or immediate action, and ample time was allowed in these three patients for the appearance of any of the effects usually mentioned.

In this study, a total of fourteen patients with heart failure and two normal persons received camphor intramuscularly. Seven of the patients had rheumatic heart disease with mitral stenosis and insufficiency; three of the seven had also aortic insufficiency, and one had aortic stenosis and insufficiency. There were six cases of arteriosclerotic heart disease ("chronic myocarditis"), and one of syphilitic heart disease with aortitis. Ten of them showed cardiac irregularities at the time of receiving camphor; six had auricular fibrillation,

10. Heard, J. D., and Brooks, R. C.: A Clinical and Experimental Investigation of the Therapeutic Value of Camphor, Am. J. M. Sc. **145**: 238, 1913.

11. Eggleston, Cary: Article on Drug Therapy in Nelson's Loose-Leaf Medicine **4**: 491.

two had frequent premature beats, one showed persistent auricular flutter, and one had constant coupled rhythm from ventricular premature beats, not induced by digitalis. All diagnoses of irregularities were confirmed by electrocardiograms.

Two patients each received three injections of camphor, eight each received four, and two each received five doses. Two of them were given single doses of 2.4 gm. (36 grains) and 3 gm. (45 grains), respectively. The two normal persons each received 2.4 gm. (36 grains). The intervals at which observations were made were such as to indicate fairly clearly the presence or absence of any effect on the circulation, immediate or delayed, sustained or transient.

RESULTS

In none of our patients or normal persons did camphor exert any demonstrable influence on the circulation. In general, it may be said that there were slight changes in heart rate, respiratory rate, blood pressure and vital capacity during the period of study; but these changes were inconstant in amplitude and direction, and so clearly unrelated to the time of injection that it was quite impossible to attribute them to the effect of camphor. If an increase in heart rate or blood pressure occurred five minutes after one dose of camphor, there was apt to be a similar or greater decrease five minutes after the next dose. We have disregarded, as being within the normal limits of error, changes in heart rate of 4 or less a minute, changes in respiratory rate of 2 a minute, changes in blood pressure of less than 4 mm., and changes in vital capacity of 50 c.c. Disregarding such minor changes, a careful analysis of all our data reveals that in no single instance was the behavior of the heart rate, respiration, blood pressure or vital capacity the same after any two injections. Moreover, in all patients the changes were such as would be expected to occur naturally in such persons, and were similar in character and degree to changes actually noted before camphor had been given. This was especially true with regard to the blood pressure in patients with hypertension or auricular fibrillation; in both conditions, as is well known, there is considerable variation within a short time, and the only significant changes in blood pressure in our series were noted in subjects with one or both of those conditions.

Electrocardiograms taken before, at intervals during, and after the administration of camphor showed no changes in form or amplitude of any wave.

So far as we could determine by careful questioning, there was no change whatever in the symptoms of ten of the patients; the remaining four were definitely more uncomfortable after camphor than before. In three of them, as already mentioned, the condition had become so much more grave that it was considered unwise to delay the administration of digitalis even one day. We do not pretend to say that camphor was responsible for their change; we do wish to point out that camphor did not prevent their becoming worse during the time it was being given.

Twelve of the fourteen patients received digitalis subsequently. Ten of them showed prompt and definite improvement; in six, the improvement was marked and lasting. Two showed no response to digitalis, and two did not receive it.

It is unfortunate that the number of observations on each patient was so large as to prevent the inclusion of all charts. We give, however, two complete tables which seem to us typical; one (Table 1) shows the changes noted after repeated small doses of camphor, the other (Table 2) indicates the observations following a single large dose. A brief summary of the entire study is given in Table 3.

SUMMARY

Fourteen patients with advanced congestive heart failure and two normal persons were given intramuscular injections of camphor-in-oil in repeated small doses and single large doses, the total amount varying between 0.6 gm. (9 grains) and 3 gm. (45 grains). Frequent observations were made to determine its effect on the cardiovascular system.

We obtained no evidence that camphor in such dosage had any action whatever on the heart rate, respiration, blood pressure, vital capacity, electrocardiogram, or general clinical condition of the patient.

The subsequent administration of digitalis resulted, in ten of twelve patients, in prompt and definite improvement.

CONCLUSION

We feel that camphor has no demonstrable action on the circulation in congestive heart failure, and therefore has no rational place in the treatment of that condition.

REHABILITATION OF THE PHYSICALLY HANDICAPPED *

R. M. LITTLE
Director of Rehabilitation, State of New York
ALBANY, N. Y.

A rehabilitation service for the physically handicapped has been established by the federal government and thirty-six states. It is not a new form of charitable service that attempts to mitigate the losses and sufferings of industrial workers occasioned by accident, disease or congenital defects, but it is an effort to return citizens suffering from physical defects that interfere with their vocational opportunities, to remunerative occupations, that they may lead independent, self-supporting lives.

The persons who are eligible for the service must be 14 years of age or over, citizens of the states in which they reside, and not feebleminded, epileptic or maintained in custodial institutions. They may have met with their handicaps in industry or otherwise; that is, they may be the victims of accidental injury or be suffering from the result of disease or congenital defects, but they must be normal mentally and susceptible of rehabilitation.

This national program has been started because of the large number of physically handicapped people throughout the country. Every year there are about three million lost time industrial accidents, many of which are of a minor nature and most of which do not result in permanent partial disability. The permanent partial disability cases are the ones for which the rehabilitation service is primarily intended. In addition to those who are crippled in industry, there is an unknown, but large number injured by automobiles and trucks, and in agriculture, play and home life. To those who are injured by accidents must be added that pathetic number who suffer permanent partial disabi-

* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

lities through diseases such as poliomyelitis, rheumatism, heart trouble and tuberculosis. A smaller number should be added who are disabled by congenital defects.

As the rehabilitation service is economic and social in aim, it is offered primarily to those who are of a working age and who have potential ability that may be developed and directed toward gainful pursuits. The incurable and unhelpable do not come under the purview of the service, but the practical administration of the laws frequently brings us into twilight zones.

ACCOMPLISHMENTS FOR THE YEAR

During the year closing June 30, 1923, 4,530 handicapped persons were rehabilitated, and there were under the care of the thirty-six state bureaus, July 1, 11,267 active cases. The total expenditures from federal and state funds for the last year amounted to $1,159,811.63, or a per capita cost of $253.84. It is a significant economic and social fact that physically handicapped persons can be returned to gainful occupations at a per capita cost of a little more than $250, which includes all administrative expenses, tuition, supplies, traveling, artificial appliances and everything that is done for the patients. Something of the economic and social gain may be indicated from the fact that last year 4,530 persons started earning $4,530,000 in wages instead of having $1,359,000 expended for their maintenance.

WHAT IS REHABILITATION?

The law defines rehabilitation as the rendering of a physically handicapped person fit to engage in a remunerative occupation. The aim is to adapt handicapped persons, by physical reconstruction, advice, training and guidance, to occupations in which they may be employed on the same conditions as are normal workers. From the industrial point of view, rehabilitation is the third phase of a conservation program for workers. The first phase of the program is safety, health and sanitation in the places of employment. The second phase is compensation and medical and surgical survice for the injured during the period of disability. The third phase is rehabilitation for those who are injured, and cannot return to any occupation without some special training or assistance. The first stage in rehabilitation is rendering an injured person physically and mentally fit for retraining. From the medical point of view, rehabilitation is all-round convalescence, including the physical, economic and social welfare, and should start at the time of an injury and proceed synthetically through the hospital and convalescent period, embracing medical and surgical treatment, perhaps prevocational therapy, sometimes occupational therapy, or a brief experience in a curative workshop and retraining by a special course of instruction for a job.

Experience shows that the rehabilitation of the disabled is a highly complex, specialized, personal service which must take many forms, according to the peculiar difficulties and aptitudes of each person. Every physically handicapped person presents a number of distinct problems with which the rehabilitation workers must deal sympathetically and with imagination, patience and ingenuity. Case work methods, therefore, are fundamental to success in rehabilitation.

HANDICAPS OF THE PHYSICALLY DISABLED

When industrial workers meet with bodily injuries that prevent their returning to occupations, the handicap is usually serious and involved:

1. First of all, there is a lowered morale. They are injured not only in their bodies, but also in mind, and they are depressed in spirit. The medical and surgical service needed to restore them physically is but the beginning of their rehabilitation. They must be restored to an attitude of hope and cheerfulness, and be led to believe in their ability to engage again in remunerative work. Often the upbuilding of the morale of the handicapped is the most difficult and also the most necessary part of their rehabilitation.

2. When an industrial worker loses a hand, arm, foot, leg or eye, this physical disability requires a complete reorientation before he can become a normal worker. This may be accomplished by a course of training, the learning of a new operation, or a skilful adaptation of the remaining members of the body to a trade; but it always involves the forming of new habits and methods of work.

3. Most industrial workers who suffer bodily injuries have received a meager education and have only a limited knowledge of industrial opportunities. Having followed one or two lines of work for several years and being habituated to these tasks, when they are disassociated from the work in which they have become skilful they are frequently at a loss to think of any other opportunities that they might find in industry. The door of industrial opportunity seems closed to them.

4. Added to the lowered morale, loss of hope and lack of knowledge of other occupations, they often find themselves confronted by involved questions of compensation and medical and surgical attention. Seriously injured in body, without work, without income and apparently without an opportunity, they are overtaken by a complex of fear lest they should lose their compensation, be permanently disabled, and never again be able to earn their livelihood. It is difficult for one who has never had such an experience to appreciate how genuine and deep seated this fear of helplessness becomes in many of the physically handicapped.

5. Public opinion about the physically disabled is one of the greatest handicaps that has to be overcome. Injured persons may have friends and an occasional employer who will encourage and assist them to return to gainful occupations; but public opinion, as a whole, has not dealt very wisely or hopefully with the physically handicapped. The injured worker is often made skeptical of his ability to render satisfactory service because the general public assumes that it would be impossible for him to do so. He has lost his place in the industrial order by losing a part of his physical strength and skill. At best he must be an odd job man and he can never hope to compete with normal workers in the standard industries. Unfortunately, this is the common judgment of society concerning the physically handicapped, which reacts discouragingly on them.

THE MEDICAL AND SURGICAL TASK

This national effort to rehabilitate the physically handicapped brings the medical and surgical service that they receive under the observation of the governmental authorities. It is a pleasure to speak of the fine service that is being rendered by many physicians and surgeons, and the remarkable cures and skilful operations that are being performed. Contemporaneous with this new effort, there has been a broadening and enlightening movement at work in the medical profession. Physicians and surgeons of outstanding ability have turned their attention to the disabled industrial workers. They are rendering a service to the disabled that is beyond

praise. In many of the large cities and industrial centers, special hospitals and clinics for their particular treatment have been and are being established. The results achieved in some cases are marvelous. In many of the states, rehabilitation workers are able to secure the most skilful and painstaking assistance from physicians and surgeons of the highest standing for their trainees.

But this is the bright and promising side of the picture. There is another side, which must be drawn in darker colors, with an occasional dash of lurid red to indicate the indignation rehabilitation workers feel as they often observe the results of ignorant, unskilful and thoughtless medical and surgical practice. Evidently there are many members of the medical and surgical profession who need to be rehabilitated as regards their morale, training and skill, quite as much as the physically handicapped themselves need rehabilitation. This is the testimony from every state engaged in the rehabilitation service. The amount of poor medical and surgical service that the rehabilitation agents observe is distressing. In addition to better training and preparation for professional service, there needs to be developed among men in the profession that which Sir Robert Jones has well called "an orthopedic conscience." Perhaps the rehabilitation service of the government will help to emphasize this need, which all intelligent and honorable members of the profession recognize. Formerly, many cases of bad surgical work and incompetent medical service were not called to the public attention; but now the maimed and crippled are being hunted up and the causes of their handicap ascertained. Gradually there is accumulating a large amount of data bearing on this point. The data furnish the basis for discussion in government conferences, among employers, social agencies, insurance agents and labor meetings, and in the conferences of medical associations. The public is being made aware of the necessity of a higher standard of medical and surgical service in behalf of the disabled. This is necessary if the rehabilitation service is to accomplish the maximum results. Competent medical and surgical service is the first step in rehabilitation. Unless this type of service has been rendered, frequently all other efforts come to naught. As first things should always be put first, the rehabilitation service, as it becomes experienced, will more and more emphasize the medical and surgical phase of the problem.

Perhaps a few illustrations may be of interest in this connection:

A young man had his right arm fractured 2 inches above the elbow joint. The arm was set improperly so that the lower arm could not be raised above a horizontal position. Clearly, not much thought and skill were exercised in the first operation. A second operation removed the overhanging bone, and in a few weeks the worker was able to use the arm.

A carpenter injured his right hand on a circular saw, resulting in the loss of the index, middle and third fingers of his hand. The thumb was badly cut at its base. The surgeon who dressed the hand gave no thought to the man's occupation. He removed the thumb, although the patient objected. Presumably it could have been saved, but it was removed lest infection set in. In amputating the finger, a part of the bone near the knuckle was left protruding, while the third finger, not having been sufficiently massaged and exercised, was allowed to heal in a stiff position.

Another illustration is that of a double fracture of a right ankle, caused by a foreman's being thrown from an express wagon. He was taken to a hospital, but sent home without anything being done for him. During the night the pain was so great that a physician was called, who set the bone and placed the leg in a plaster cast. The insurance physician called the next day and, finding the leg in a cast, did nothing. Four months later, when the cast was removed, it was clear that the bone had not been properly set. The result is that the right leg is much shorter than the left, and the man continues to suffer pain.

Another example is that of a man whose right wrist was fractured while he was working as a chauffeur on a truck. The wrist was dressed at a hospital. It healed, and the man returned to work although suffering pain. He complained that every time he turned his arm, the wrist cracked. A subsequent examination revealed the following conditions: "Evidences of old healed fracture; right radius about 1½ inches from the wrist joint. Also dislocation of the lower end of the ulna. Dislocated posterially. Styloid process is sharpened. Radial fracture is healed. In good alinement."

A man, aged 23, suffered a severe burn on the face from an explosion of caustic soda. At the hospital, special attention was given to saving his eyes, but no treatment was applied to prevent the face from being disfigured by scarred tissue. Although his eyesight was saved, he cannot close the lids, and all the rest of his face is so horribly disfigured by scarred tissue that the young man has sat in a darkened room for more than two years.

These cases illustrate mostly the lack of scientific skill and intelligence in treating patients. There is another line of observation that ought to be mentioned. Many surgeons perform successful operations so far as a cure is concerned, but fail to think of the functional use of members of the body. Their patients may make a good recovery. The operations may have been brilliant, but with resultant useless members; stiff pendant fingers, hands and feet that are of no use, and the existence of which prevents the use of artificial appliances. If one who took an automobile to a garage to have it overhauled, found, on receiving it, that the engine did not run, he would not think very highly of the automobile mechanic. When industrial workers are taken to hospitals and clinics, but are unable to do any work afterward because of the thoughtlessness of the surgeons who operated on them, they and their acquaintances do not think very highly of the surgeons.

Obviously, there are many things the medical and surgical profession cannot do. Just as obviously, there are thousands of surgical operations that have not been properly performed. A considerable part of the rehabilitation service consists in reviewing and correcting bad medical and surgical work. Indeed, some rehabilitation workers think that the physicians are almost as dangerous to the workers as the hazards of their employment; yet there is no profession that can do more to forward the rehabilitation service than the medical and surgical profession. The rehabilitation service calls attention to the need of an increasing number of well trained and equipped physicians and surgeons, and it will emphasize the importance of the work they do by increasing the number of their clients, making known their fine ability, and ever seeking their advice and assistance on the medical and surgical phase of the work. One of the medical profession has well said: "It is the part of the trained surgeon to see in each patient the physical possibilities of that patient; to make the patient and his friends see them, and finally either to realize such possibilities himself or set the patient in the way to have all proper hope of improvement realized in such hospitals or at the hands of such specialists in surgery and in training as may be necessary. Then the patient will profit fully in body and mind by a proper program of vocational rehabilitation."

ABSTRACT OF DISCUSSION

DR. HARRY MOCK, Chicago: For a number of years I have been a strong advocate of having laymen talk to us. It is humiliating to have laymen tell us of the poor results the profession has obtained in some cases. We know it is not true of all the profession; nevertheless, there are a large number of our profession that are seeing only the surgical end-results. This rehabilitation work is away from those that have kept up the medicosociological and the bigger, broader, economic result. Thirty-six states have vocational rehabilitation laws, and these laws define rehabilitation to render a disabled person fit for remunerative occupation. It should be remembered that that person, when he first got his disability, fell into the hands of a physician, and we must start him properly on the road to fitness for remunerative occupation. Many disabled people treated in the last fifteen or twenty years need further medical or surgical care to render them fit for a remunerative occupation. Thanks to broad minded men, like Dr. Little, the states are giving surgical help, hospital care, functional care and placement, and all the things that render a man fit for remunerative occupation. Rehabilitation is much bigger and broader than the term vocational. The greatest hobby a man can take up is this rehabilitation work. First it was a hobby; but now it is becoming more and more a serious business.

PHYSIOTHERAPY IN ORTHOPEDICS*

RICHARD KOVACS, M.D.
Supervisor of Physical Therapeutics, Reconstruction Hospital
NEW YORK

My object in this paper is to relate in a condensed form the physics and the mode of action of the various physical therapeutic measures as generally used now, and to describe their application in orthopedic conditions in which they are indicated.

The unfamiliarity of the average medical practitioner with physical therapeutics is based on the fact that, for the last few decades, no adequate teaching of this important branch of therapy has been given. Eggleston,[1] in 1916, found that, in the model medical curriculum as recommended by the Council on Medical Education, 165 hours were devoted to pharmacology and toxicology, sixteen hours in the third year to nonpharmacal therapeutics, including hydrotherapy, climatology, dietetics, electrotherapeutics, psychotherapy and other physical and physiologic measures, and that fifteen hours in the fourth year to electrodiagnosis and therapeutics. Marvel,[2] in 1912, said:

> Whence comes most of our knowledge of physical therapeutics? Not from colleges in which it ought to be taught but from physical culture schools, mechanotherapy and osteopathic schools, irregulars, etc. Little wonder that there is today a rapid growth in the patronage of these various cults and pathies and in the public sympathy with legislative efforts toward their legal standardization and professional recognition.

This was written twelve years ago, and since that time developments have proved that the medical profession of today is paying the price of its own neglect in more than one way. A great many medical and surgical conditions can be permanently relieved, or at least benefited by appropriate physical therapeutic measures, and, if the patient does not receive them from the regular practitioners, he will turn to the irregular ones. It is an unfortunate fact that nowadays chiropractors and physical cultists are very good buyers of electrotherapy apparatus, although it would seem that some restraint could be put on manufacturers' advertising and selling through medical publications.

On the other hand, many medical men who have used physical therapeutics exclusively have been, like any other specialists, too overenthusiastic in their claims regarding the value of a certain line of treatment. As most of such treatments were given to patients in private practice, and favorable reports were often based only on single cases, the results published were not subject to the scrutinizing trial of fellow physicians in the same institution, and, consequently, they were not readily accepted by the profession at large as conclusive proofs.

The scientific application of physical therapeutics as a whole, or in any particular modality, must be based on a fully established clinical diagnosis; it must fully visualize the underlying pathology and the physics of the form of physical therapy trying to influence this pathology, and, finally, it must be given with a correct technic, which means efficient apparatus, trained workers, and treatments of sufficient length of time and frequency. Physical therapeutics should rarely be used to the exclusion of other recognized medical and surgical measures, but rather as an adjunct to such measures.

As a result of the World War and the grouping in large hospitals of injured and diseased men who had to be put back to full functional ability in the shortest possible time, an opportunity was given to try out physical therapy measures on a very large scale. As a direct result of this tryout, many surgeons and medical men who worked in team with a well equipped and directed physiotherapy department became convinced that physical therapy properly indicated forms a valuable adjunct to medical and surgical treatment. At the International Congress of Military Surgeons held in 1921 at Brussels,[3] by the medical men of all allied, associated and neutral powers, a set of unanimous official conclusions was drawn up, and among them was the following:

> Regarding the principles for fracture treatment learned by experience in the war, the congress emphasizes the primary importance of directing treatment from the first day with regard to the functional future of the limb, and of resorting in this behalf to physiotherapeutic measures, and especially to the earliest possible mobilization of the limb.

The *United States Naval Medical Bulletin*[4] in 1920 stated that:

> The war has served to emphasize the great value of physical therapy and has proved that without its employment many physical disabilities caused by injuries or disease could not have been treated so successfully. If, however, these principles are not applied to postbellum conditions, the lessons thus learned by bitter experience will have been more or less in vain.

Industries and insurance companies have been quick to see the economic advantages of the possibility of shortening the disability by the addition of physical therapy to recognized forms of surgery and orthopedics, and, after the pattern of war hospitals, physiotherapy departments have been established in connection with numerous civilian hospitals and industrial plants.

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* Read before the Section on Orthopedic Surgery at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

1. Eggleston, E. L.: The Status of Physical Therapeutics in the Medical College Curriculum of Today, J. A. M. A. **67**: 799 (Sept. 9) 1916.
2. Marvel, Philip: A Plea for the More Frequent Scientific Employment of Physical Therapeutics, J. A. M. A. **59**: 757 (Sept. 7) 1912.
3. U. S. Nav. M. Bull. **17**: 1062, 1922.
4. U. S. Nav. M. Bull., October, 1920, p. 535.

Orthopedic surgeons were among the first ones to recognize the advantages of the extended use of physical therapeutics. Whitman[5] states that:

> Reconstruction treatment, particularly physiotherapy, is of great importance in industrial surgery because, aside from its actual physical effect, it keeps the patient under observation and control during the critical period between the active treatments of the injury and the return to work. In practically all instances as a result of disuse, the muscles and other tissues, including the bones themselves, are atrophied and weak, and the first indication for treatment is to improve the circulation upon which repair is dependent.

Jones and Lovett[6] give a fair account of the various physical remedies used in the after-treatment of poliomyelitis, and advocate the use of radiant light, heat and massage in the treatment of traumatic conditions.

Turning now to the presentation of the various physical modalities found useful in orthopedic conditions, it is perhaps unnecessary to state that baking and massage, a designation commonly used in insurance company quarters and in some dispensaries, does not constitute our conception of physiotherapy. Baking, as such, is a misnomer, since it means the coagulation of albumin, and necessitates the elevation of the temperature in the interior of the substances that are being baked to a degree of 160 F. or higher, whereas the body temperature, general or local, probably never exceeds 106 F. under the most intensive treatment. Still, this objectionable expression in a sense gives the essentials of the main procedure of all physical therapeutics in orthopedics, i. e., the warming up and the exercising of the part to be treated.

The main indications for the local treatment by physical measures are the following:

1. In traumatic conditions: the acceleration of the process of repair and of the restoration of function by the increase of local circulation; the promotion of absorption; the prevention of adhesions; the relief of pain; the relaxation of local muscle spasm; later, the restoration of mobility.

2. In acute inflammatory conditions: the combating of the infectious process and the relief of pain.

3. In chronic inflammatory conditions: the improvement of local circulation; the softening of adhesions; the removal of inflammatory products; the relief of pain; the increase of mobility. In sluggish or infected wounds, chronic ulcers: sterilization and mild stimulation.

4. In paralysis: the promotion of local circulation; the improvement of nutrition and the maintenance of the contractility of the muscles; the maintenance of the mobility of joints. In weak, flabby, but not paralyzed muscles, their strengthening.

5. In contractures and scar formations: the softening or dissolving of scar tissue; the increase of mobility.

The following physical therapy principles are at our command to fulfil one or several of these indications:

THERMIC AGENTS

Radiant Light and Heat.—The action of the ordinary radiant light and heat applicators with one or more incandescent bulbs of varying candle power is based on the combined action of heat, light and chemical rays. It causes vasodilatation, free perspiration and increased local metabolic changes in the superficial tissues. It is indicated in all cases of traumatism, myalgia, myositis, and in some forms of arthritis when deep penetration is not desired. It assists in the repair of wounds and in the combating of superficial infections, and it relieves pain by lessening nervous sensibility and relaxing vascular spasm. It is used preliminary to various mechanical agents (as massage, sinusoidal interrupted galvanism and static wave) as it limbers up the parts, and lowers the resistance of the skin to the passage of the electric current. To make this modality effective and safe, parabolic reflectors casting parallel rays should be used, and the source of radiance must be at a tolerable distance from the patient's skin. In cases of scar lesions combined with peripheral nerve injuries, on account of the disturbed sensation and lack of normal collateral circulation, very unpleasant and slowly healing burns easily develop. In such cases, at least one and a half of the ordinary distance should be used.

Superheated Air.—The physiologic action of local application of this form of heat therapy is local perspiration, superficial hyperemia and, later, venous stasis. Before the introduction of the improved radiant light and heat applicators and of modern diathermia, a formidable looking battery of small and large ovens was the pride of many treatment places. Favorable results were obtained in arthritic joints, as well as in inflammatory and traumatic conditions. The handling of this apparatus, however, is too complicated, and the dangers of burn are much increased; therefore, this apparatus is used, only in a much more limited degree; it seems to work well in cases of subacute arthritis with effusion.

Whirlpool Baths.—As first used in modern war hospitals, these are a very effective combination of local heat and gentle massage. Water at a temperature ranging from 100 to 110 is constantly being agitated by its own pressure or by compressed air, the limb being submerged therein from half an hour to an hour. The whirlpool bath has a profound effect on the local circulation. Cold, clammy extremities, tender after peripheral nerve injuries, become warm, red and painless after its application; indolent ulcers, osteomyelitis of terminal phalanges, painful and adherent scars are favorably influenced. It is a very good plan to use a whirlpool bath as the first treatment for every fractured limb after the removal of the cast, since it cleanses and relieves pain, swelling and stiffness. Whirlpool baths require a constant abundant supply of hot water, and are therefore not very economical. Caution has to be used in case of peripheral anesthesia.

Contrast baths consist of immersing a part first in hot water at a temperature of 120, then in ice water for from twenty to thirty seconds, repeating for seven minutes. They produce an intense local vasomotor reaction, and are indicated in toughening stumps, in cases of chilblains and in other conditions resulting from sluggish circulation.

Diathermy.—This is the most effective form of heat application to the deep structures. Heat conveyed by radiation penetrates only a very short distance and heats only the skin directly; it is spread further by conduction, and is impeded by circulating blood. An electric current of extremely rapid alternations (a million oscillations each second) does not stimulate excitable tissues or produce chemical (electrolytic) changes, but causes heating through (hence the name diathermy) of all tissues traversed by it. When a current passes along a conductor, heat is developed, the amount and degree depending on the resistance of the conductor and the intensity of the current. A current generated by a properly constructed diathermy machine and passed

5. Whitman, Royal: A Treatise of Orthopedic Surgery, Philadelphia, Lea and Febiger, 1923, p. 959.
6. Jones, Robert; and Lovett, R. W.: Orthopedic Surgery, New York, William Wood & Co., 1923.

through the body with correct technic causes no other sensation than that of heat. The more dense the tissue, the greater the resistance; therefore, bone structures will heat up more. By varying the size and position of the electrodes, one can vary the location of the greatest intensity of heat at will.

The therapeutic action of diathermy consists in deep hyperemia in the parts treated; this, in turn, disintegrates exudates, promotes absorption, relieves pain, and attenuates or kills bacteria. Diathermy is accordingly indicated in a very wide range of traumatic and inflammatory conditions. The pain, exudates and adhesions in traumatic, rheumatic and gonorrheal types of arthritis are influenced most favorably; even in some very severe cases of arthritis, in which no improvement of function can be hoped for, the sedative action of diathermy is very desirable. Sprains, strains of joints, traumatic and ordinary myositis in both acute and chronic varieties respond favorably. Diathermy is indicated in many complications of fractures for the relief of pain and the absorption of an excess of callus. A special technic for the promotion of callus formation has been worked out in war hospitals, although a convincing series of cases illustrated by the roentgen ray so far has not been published. In most of these cases, it is best to follow diathermy by a mechanical agent in order to utilize its tissue-relaxing, softening effects to best advantage. Diathermy is also indicated in bone infections, and in osteomyelitis, combined with ultraviolet radiation. It is an effective sedative in later stages of true neuritis, but will be disappointing in very acute cases and in functional neuralgias. Diathermy should not be used indiscriminately for all sorts of pain. It is contraindicated in acute nondraining infections and tuberculous processes.

For practical purposes, all types of standard diathermy apparatus will give satisfactory service, but proper technic is most essential. The technic of diathermy and other high frequency modalities, including vacuum tube applications, desiccation, fulguration and autocondensation, cannot be acquired by a salesman's instruction or in any of the stopgap manufacturers' courses, but only by actual work under experienced leadership and under constant visualization of the pathology of the individual case.

MECHANICAL AGENTS

Massage.—This has the advantage of requiring only a pair of skilled hands for its application, and it is therefore available in fractures and other traumatisms at the bedside, from the very day of the injury. It will improve circulation, hasten absorption and thus prevent stiffness and pain. Preceded by a thermal agent and followed by active or passive movements, it will work to best advantages. In deformities and in weak but not paralyzed muscles, it has been found most useful when combined with correctional exercises. There is modern experimental evidence to prove that massage is only of very slight benefit in preventing atrophy of paralyzed muscles.[7] In paralysis, only the lightest form of massage is indicated because; owing to the atrophy of the paralyzed muscle, pressure may be transmitted to the blood vessels, causing paralytic dilatation; thus, heavy massage will defeat the end sought. Heavy massage can be employed in chronic cases in which no pain exists. Massage is contraindicated in all acute inflammatory processes, new growths and thrombosis. It should be ordered with definite directions by physicians, and administered by fully trained operators.

Mechanical Vibration.—This is applied by one of the many acceptable pieces of apparatus on the market, performs deep massage and percussion, is less tiring to the operator, and is also more easily regulated. It has been found useful in many forms of chronic myositis, in sacro-iliac and sacrolumbar strain and other backaches, and should usually be preceded by a thermal agent.

Manipulation; Active and Passive Exercises.—These are valuable in increasing the range of motion of joints and developing muscle power, and are indicated in all forms of traumatism, sprains, fractures, chronic inflammatory conditions, paralysis and deformities. They are too well known to orthopedic surgeons to need further amplification here. As to mechanical treatment by apparatus, the present tendency is to use apparatus of very simple construction; ordinary weight and pulley exercises have replaced all the elaborate machinery of the Zander type, which takes a large amount of space and is needlessly costly. All exercises should preferably be taken after preliminary preparation of the parts by heat, massage or other mechanical agents.

Static Wave Current.—This produces a very fine continuous, painless, molecular massage, compared to which the ordinary hand massage is traumatic. In its physics, it represents a current of great force but very little volume; a soft metal plate covers the part to be treated, and, at each discharge of the machine across the spark gap, there will be a contraction of all contractable tissues underneath the electrode. The static wave is indicated whenever tissue drainage and relief of stasis is desired, as in all acute traumatism, in which it acts to pump out the extravasated fluid before it becomes organized. In organized exudate, a previous softening by a thermal agent is necessary. In chronic noninfectious inflammatory conditions, it will relieve local congestion and pain. It is contraindicated in the presence of pus, or of malignant or tuberculous processes.

Static sparks produce a sudden and powerful contraction of local tissues, causing a violent disengorgement of these with a subsequent reduction of pressure and relief of pain. Sparks are produced by approaching a patient sitting on a charged static platform with a grounded electrode. Deep-seated congestions, muscle spasm and periarthritic conditions beyond the reach of massage respond often to sparks.

The static brush discharge is a refinement of the coarse spark, which is nebulized. It has been found useful in stimulating local blood supply and in relieving local induration and pain in acute traumatism, gout and neuritis. The patient has a feeling of a stream of hot sand being directed at him.

The static machine, when properly understood and used, forms a very valuable part of the armamentarium in physical therapeutics.

Faradic Current.—This is obtained by the transformation of a constant or direct current by an induction coil into a current imparting stimuli of about one-thousandth second duration in rapid succession. Acting through the nerve endings, it produces active contraction in muscles with a healthy nerve supply. Its effects are those of all normal active movements; namely, increase of circulation and nutrition and strengthening of the muscle. Its use is indicated when active exercises are not practicable, as in all cases of weak and flabby, but not paralyzed, muscles. In contrast to the original faradic current, the modern Bristow

7. Stookey, B. P.: Surgical and Mechanical Treatment of Peripheral Nerves, Philadelphia, W. B. Saunders Company, 1922, p. 191.

coil enables us to obtain these contractions painlessly, with alternate periods of rest resembling a surging effect. The faradic current is most important as a diagnostic test in the case of suspected nerve lesions.

Galvanic (Constant or Direct) Current.—This causes muscle contractions only when its flow is suddenly started or cut off. Normal muscle responds briskly; muscle with injury or disease of the nerve, or a damaged condition of the anterior horn cell, responds with a slow and sluggish contraction. This condition, and the lack of any faradic response, is called the "reaction of degeneration." According to Tilney,[8] muscle with this reaction does not contract voluntarily or reflexly and, being unable to perform its natural function of contraction, tends to revert to the noncontractile connective tissue type. The purpose of treatment of such muscle by the interrupted or sinusoidal galvanic current is to preserve the deficient function of contraction until the muscle regains its lost connection with its center of energy. This, therefore, is a beneficial and efficient procedure in paralysis, and it should not be replaced by the use of massage and muscle education only, as advocated by men who have had no experience with properly used electrical stimulation. It is naturally taken for granted that proper splinting for the prevention of overstretching is being used in all cases.

Sinusoidal Current.—This is an alternating current with a gradual rise and fall in strength. The alternations can be made slow or rapid and their curves varied, any number of combinations and muscle contractions of varying character thus being obtained. Straight galvanic sinusoidal current is the most pleasant and effective means of imitating the missing normal motor nerve impulse.

CHEMICAL AGENTS

Ionization.—The well known tissue softening effect of the negative pole of the straight galvanic current is used for the loosening and freeing of excessive or adherent scar tissue. Prolonged application of this modality, when combined with thermal and mechanical agents, can be depended on to give favorable results. Ionic medication into joints, enthusiastically recommended two decades ago, has been practically abandoned, as its results, which were found to be due mainly to the nutritional effect of galvanism, are surpassed by modern diathermy.

Ultraviolet Rays.—Actinic or ultraviolet rays are the rays beyond the violet part of the visible spectrum. They seem to exert a powerful action on living structure, and in moderate doses are nourishing, tissue stimulating, and pain relieving; in stronger application, they are bactericidal and tissue destroying. Extended experimental work by many investigators is now in progress to provide a rational explanation of the mode of action of ultraviolet rays, as most of the results achieved so far are mainly empiric. Sunlight in mountain regions contains an abundance of ultraviolet rays, but the dust and moisture in a city atmosphere absorb most of the latter, so that, for constant use, we are compelled to depend on artificial sources of supply. The quartz mercury burner is the most effective of these; a low tension electric current heats and vaporizes mercury in a fuzed quartz container. The radiations of this "air cooled" lamp are used for general systemic treatment in rickets, in joint, bone and glandular tuberculosis, osteomyelitis, usually when given in conjunction with local ultraviolet treatment. That tanning of the skin is a necessary part of the ultraviolet treatment seems questionable. Local treatment alone is used for mild stimulation, and sterilization in chronic ulcers. For intensive local action in cavities or sinuses, the water cooled ultraviolet burners are used, thus making various degrees of local application possible.

These various physical therapeutic modalities have been in use under practically the same indications for the last three years at the Reconstruction Hospital of New York. They are always used in conjunction with other medical, surgical and orthopedic measures.

REPORT OF CASES

The following case reports will serve to illustrate the practical employment of physical measures:

CASE 1.—*Fibrous ankylosis of ankle following comminuted fracture of tibia and fibula.* R. K., a man, aged 41, admitted, Oct. 18, 1923, had fractured his left tibia and fibula, two months before. On account of overriding, a Steinman pin was inserted and kept in place for three weeks. The left leg, ankle and foot were found greatly swollen on the initial examination, the foot being held in a position of drop at 210 degrees flexion, with only 10 degrees of movement possible in either direction. The patient walked on crutches. Roentgen-ray examination of the left foot showed a spiral fracture, complete, transverse, in the lower angle of the tibia, 5 cm. above the ankle. There was some mushrooming of the fragments, and some outward displacement of the lower fragment. Transverse fracture of the fibula was present about 7 cm. above the articulation. The external malleolus was taken off, and displaced outward, with mushrooming of this bone. A lateral view showed the bones in fair alinement and with some backward displacement of the external malleolus. There was good callus formation. Treatment consisted of diathermy through the left ankle, followed by the static wave. Then manipulation and active exercises were applied to the ankle; these were gentle at first, but more vigorous later. By December 31, all the swelling had gone, the patient had a range of 50 degrees in the ankle and was able to bear weight on the foot. Treatment was continued, with the addition of stretching of the ankle, and a quarter-inch raise of both shoes on the inner border was made. Three months after the beginning of treatment there was no pain in the ankle in spite of the patient's standing on it, with full range of flexion and extension, and only restriction of inversion. The patient resumed his usual work as a floor walker, Feb. 18, 1924.

CASE 2.—*Traumatic neuritis of right circumflex nerve after dislocation of humerus.* F. F., a man, aged 42, suffered a subglenoid dislocation of the right humerus, Dec. 15, 1922, which was promptly reduced and the shoulder immobilized for two weeks. By February 21, the patient still had marked limitation in abduction, flexion and extension of the shoulder in spite of active physiotherapy, consisting of radiant light, massage and mechanotherapy. He was suspected of being a malingerer, when electrical testing showed full reaction of degeneration of the right deltoid muscle. Interrupted galvanism was added to the treatment with the result that the shoulder improved steadily. By June 30, the function was almost complete, and by November 12, full normal electrical reactions had returned. The patient resumed work as a pianist.

CASE 3.—*Brachial plexus injury after cervical rib operation.* A cervical rib was removed from the right side of the neck of the patient, D. T., aged 28, a fireman, after fifteen years of uncertain pains and difficulty in the right shoulder and arm. The day after the operation, the patient could not move his right hand and arm. The report of the operation showed no nerve traumatism, and the opinion of the consulting neurologist was that a hematoma was causing pressure and subsequent paralysis. After being held up by an aeroplane splint, with some improvement, the patient was referred for physiotherapy two and a half months after the operation.

A physical examination, June 4, 1923, showed marked atrophy of all shoulder muscles, and also of the muscles of

8. Tilney, Fred: The Present Management of the Poliomyelitis Epidemic in New York City, New York M. J. **104**: 1221 (Dec. 23) 1916.

the arm, forearm and hand. Shoulder motions were limited to 10 degrees flexion, but there was no active extension. All passive movements were normal. Electrical testing revealed a total absence of faradic response of the right deltoid, teres minor and infraspinatus. There was sluggish response to interrupted galvanism, and a marked area of anesthesia in the lower deltoid region. Our diagnosis was traumatism of the right circumflex nerve, probably originating from trauma of the posterior cord of the brachial plexus.

Treatment was instituted as follows: An aeroplane splint was applied to the right shoulder in 90 degrees abduction, with the elbow flexed at 90 degrees. Physiotherapy consisted of: (1) Diathermy from the site of the scar to the hand resting in a water bath. This was done in order to promote absorption of the remnants of the hematoma and to induce improvement of nutrition in all muscles of the extremity. (2) Interrupted galvanism to the paralyzed muscles of the right shoulder. (3) Gentle massage of all muscles of the right upper extremity. Occupational therapy was added to this, and, six weeks afterward, active mechanotherapy. The patient showed steady improvement. October 11, four months after beginning treatment, he had complete normal active flexion, extension and rotation of the shoulder; the grip was 10 in the right hand and 90 in the left hand. The patient now responded to the sinusoidal current applied on the paralyzed muscles; therefore, the sinusoidal current was substituted for interrupted galvanism. November 30, the patient responded to faradism, thus completing full electrical recovery.

CASE 4.—*Paralysis of left lower extremity after poliomyelitis.* L. N., admitted, Jan. 6, 1922, aged 6 years, had had infantile paralysis at the age of 10 months. He had had two transplanting operations (peroneal brevis into tibialis anticus) at the age of 3½, followed for one year by massage. Our examination on admittance revealed a child, wearing braces on both legs and possessing marked muscular atrophy of the left leg. Electrical testing shows very sluggish galvanic response of quadriceps, glutei and biceps and no response of the semitendinosus or the semimembranosus. Clinically, there was no extension in the knee, and there was a lack of power in the calf muscles. The patient received radiant light, massage and the sinusoidal current. By Oct. 22, 1923, the quadriceps, sartorius, adductor longus, semitendinosus and semimembranosus showed complete normal electric and clinical response. The calf muscles had recovered from weak normal to fully normal response. On the other hand, the peroneus brevis tendon, which had been transplanted into the tibialis anticus, had lost all dorsal flexor action, compelling the child to continue wearing a brace on the leg.

CASE 5.—*Osteomyelitis of terminal phalanx.* S. L., aged 23, was admitted, Feb. 13, 1924, with osteomyelitis of the terminal phalanx of the second finger. The condition had started with a lacerated wound, Dec. 26, 1923; wet dressings had been used at first; then, incision followed by daily dressings. Examination on admission revealed a sinus on the anterior surface of the terminal phalanx leading to roughened bone, thick yellow pus (staphylococcus) exuding. There was no active flexion at the terminal joint; there was marked swelling and 25 per cent. flexion present at the proximal interphalangeal joint. Roentgen-ray examination showed osteomyelitis and several small sequestrums. He received whirlpool baths daily, and by March 17, sequestra having been extruded under treatment, the sinus closed completely. There was 25 per cent. motion in the distal interphalangeal joint. He was started on active exercises, April 16, and by April 21 he had 50 per cent. flexion in the distal and full flexion in the proximal joint. All pain had disappeared. May 5, he had 75 per cent. flexion in the distal joint.

CONCLUSIONS

1. Physical therapy affords the means of benefiting a wide range of orthopedic, and especially traumatic, conditions.

2. Modern physical therapeutics should utilize all physical agents that have been found to be effective and rational. Treatment should be administered or supervised by medical men specially trained in these methods.

3. Physical therapeutics will be most effective when it is used in conjunction with recognized medical, surgical and orthopedic measures.

4. In the interest of securing the proper place for physical therapeutics in orthopedics, it is desirable that physical therapy methods should be employed and studied on a much wider scale than they are at present, and that the results of properly indicated and administered treatments should be recorded and published.

223 East Sixty-Eighth Street.

ABSTRACT OF DISCUSSION

DR. CHARLTON WALLACE, New York: Dr. Kovacs' statement of the fundamentals of physiotherapy is quite modest. He has not made any extraordinary claims. When one witnesses the relief from subjective symptoms and disappearance of physical signs, one is convinced that physical therapeutics is an essential form of treatment. Proper application of this agency is dependent first, on correct diagnosis and recognition of the underlying pathologic condition; secondly, on surgical treatment whenever operative intervention is indicated as a preliminary, and, thirdly, on the employment of trained operators to carry on the work. Some of my own clinical observations are that some forms of arthritis, disabilities of a joint following fracture and nonunited fractures respond well to physical therapeutics.

DR. JOHN P. LORD, Omaha: Physiotherapy is a handmaiden that is virtually indispensable in orthopedic practice. I agree with everything that has been said in regard to it, and wish that I had time to amplify.

DR. M. T. KOVEN, Brooklyn: There are few conditions that are not benefited by physiotherapy. In arthritis of the gonorrheal type, diathermy, locally and at the site of infection, is almost a specific for the relief of pain, and very often it prevents ankylosis. In a series of cases of bursitis, absorption of the subdeltoid bursa was effected in four cases. We are trying a new technic in cases of infantile paralysis. One of the functions is to have a member kept warm. We introduce heat into the entire extremity by means of diathermy, whereby the entire affected limb will be kept warm over a considerable period of time. At the same time, we are introducing diathermy at the site of the lesion, hoping that we may get some absorption of the exudate resulting from the acute inflammatory process. The use of the ultraviolet light will prove to be one of the greatest helps in the prevention of bony deformities. There are two contraindications to the use of diathermy: an inflammatory condition and when hemorrhage is to be apprehended.

Secondary Anemia.—The study of a case of anemia requires primarily a carefully taken history including a consideration of the occupation and a complete physical examination with particular reference to probable foci of infection and attention to the possibility of hemorrhoids and undue uterine bleeding. Oftentimes exhaustive laboratory and roentgenologic examinations are required. An obvious preliminary, prerequisite to excluding pernicious anemia, is a count of the red and white blood cells, the estimation of hemoglobin, and study of stained films. As part of the latter, search should be made for blood parasites, stippled red blood cells, and nucleated red blood cells. A blood Wassermann test should be done routinely. The stools should be examined for occult blood, parasites and parasitic ova. The stomach contents obtained after test meals may yield data of value in indicating the presence of gastric ulcer or malignancy. If definite information be not secured by other means, the teeth and nasal sinuses should be submitted to roentgen-ray examination, and if other lines of investigation prove fruitless, the gastrointestinal tract should be investigated by the same means.—Cummer, C. L.: Secondary Anemia, *J. Indiana M. A.* **17**:169 (June) 1924.

NEGLECTED FACTORS IN THE PREVENTION OF APOPLEXY*

H. H. DRYSDALE, M.D.
CLEVELAND

The achievements of preventive medicine during recent years have been truly epochal. The child of today finds itself surrounded by every conceivable health safeguard, and nothing is being left undone to raise the physical stability of the coming generation to the highest possible standard. From a health standpoint, our children, as never before, are being adequately equipped to meet the responsibilities that eventually must come to them. All this is commendable and highly desirable, but it should not end there. Does not the other extreme of life require the same special care and attention if the human machine is to continue in a state of efficiency for the greatest possible number of years? The preservation of health and the prolonging of life is therefore a highly important consideration, and this constitutes the subject of my thesis.

Despite the fact that during the last century the average span of life has been lengthened to the extent of about fourteen years, vital statistics disclose an alarming prevalence of arterial diseases, and particularly arteriosclerosis, in persons over 40 years of age, the majority of whom are men. In Cleveland alone, during 1919, the deaths from cerebral hemorrhage (apoplexy) amounted to 438, and this number has increased each year, reaching a total of 740 in 1923.

Ordinarily, arteriosclerosis is the natural accompaniment of old age; the usual expression, or end-result of the wear and tear incident to advancing years, but when men of affairs become prematurely senescent, or are stricken in the prime of life by a sudden and wholly unexpected apoplectic insult, and not infrequently at a time when the health of the patient is regarded by himself or his family as normal, we are confronted with a responsibility that cannot be too lightly disregarded.

The significance of geriatrics, or at least that portion of it which pertains to the early recognition of presenility, was forcibly impressed on me, seven years ago:

I was consulted at that time by an aggressive high strung business man, aged 43, who complained of a persistent dull ache over the occiput, slight dizziness, restlessness, insomnia and depression. These symptoms had developed only two weeks previously, and were assumed to be due to intense worry relative to his business affairs, which had become seriously entangled. His general appearance indicated good health, and he lightly remarked that, for the first time in his life, he had lost his "pep," and was nerveless.

His father, at the age of 60, had suffered a cerebral hemorrhage and died four years afterward, following a second attack. His mother, two brothers and only sister were alive and in excellent health.

The patient escaped most of the disorders of childhood, and as a boy was robust and alert. Adolescence was uneventful. After leaving high school, he completed a commercial course, and then secured employment as a traveling salesman for a large mercantile house. In four years he was promoted to assistant sales manager.

At the age of 32, he organized a business of his own, and after passing through many critical experiences and overcoming innumerable obstacles, he prospered in the undertaking. For years he labored early and late and always under high tension. Competition was fierce, he declared, but the selling game was fascinating and irresistible. Nothing, it seemed, was too great for him to undertake, and the fear that some day he might overtax his endurance never entered his mind. The popular diversions did not appeal to him, and his vacations therefore were few and far apart. He used liquor moderately and only in a social way, but was an incessant cigar smoker. Most of his reading was devoted to what he termed the "art and psychology of salesmanship."

During 1914, he became financially interested in two promotion schemes, but within two years difficulties arose and continued to arise, until these investments were lost. His personal business also began to slump, owing to bad market conditions, and for several months he did not know what a day would bring forth. Relatives assisted him during several financial crises, but his indebtedness increased, his credit was curtailed, and he found himself in the slough of despond. He could not sleep; his mind knew no rest, and in sheer desperation he sought medical relief.

The patient was a well developed man, adequately nourished, and weighed 178 pounds (81 kg.). His heart was normal in size and position, and regular in action, with a pulse rate of 90. The systolic blood pressure measured 130 mm. of mercury, and the diastolic 99. Both lungs were clear; respiration was free and unembarrassed. The abdomen presented nothing noteworthy.

The patient's gait and station were correct; the spinal column was in proper alinement, and no incoordinate movements were noted. The grasp of his hands and the strength of his arms and legs were vigorous.

All reflexes (deep and superficial) were normally responsive, and sensation was well preserved in all its qualities. over the entire body surface. No diplopia, nystagmus, dysarthria, Babinski phenomena or clonus were present. The functions of the special senses were intact. Both pupils were round and regular in outline, but reacted somewhat sluggishly to light and distance. The retinal vessels appeared to be dark and slightly irregular, but in the absence of other objective indications, I did not interpret them as pathologic. The spinal fluid gave a negative Wassermann reaction, with no increase of cell count. The urine was free of albumin, but contained an excess of indican.

The patient's mind was alert to all questions under discussion, his memory faithful for both present and past events, and his reasoning power prompt and logical. He was extremely fearful, however, and displayed considerable emotion when his family and business affairs were reviewed. Tearfully he exclaimed that his pride was crushed and his life work cast to the four winds.

This man was advised and strongly urged to seek rest and change, away from the source of his agitation and distress, but this he would not do, asserting that, under the circumstances, he could find no peace of mind anywhere and, furthermore, that he would not desert his responsibilities at this critical time.

Nine days after my examination, I was hurriedly summoned to his home and found him profoundly comatose, the deep reflexes lost, the pupils pinhole and fixed, the face red and bloated, and the body bathed in cold perspiration. Breathing was labored, and the heart enlarged to the left.

I was informed that he awoke early in the morning, very dizzy and nauseated. In a little while he walked to the bath room, vomited and fell in a heap. His wife, who reached him instantly, thought he was having a convulsion, as the arms and legs jerked and he could not speak. The condition grew progressively worse; Cheyne-Stokes breathing gradually developed, and he died the following noon without regaining consciousness. Necropsy disclosed an extensive hemorrhage into the pons, and to my surprise the blood vessels of the base of the brain were leathery, tortuous and black. The aorta was smooth, but the coronary arteries were moderately sclerosed and the heart dilated.

DETECTION OF CEREBRAL ARTERIOSCLEROSIS

This experience was sufficient to arouse in me a new interest in cerebral arteriosclerosis, a subject that has received but scant consideration in our textbooks, but which nevertheless concerns a class of patients, the majority of whom seek relief at the hands of the neurologist.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

He was a man in the early forties, with a moderately advanced arterial disease, confined largely to the vessels of the brain and which, under ordinary conditions, ought to have been postponed at least twenty years.

According to his record, he worshipped at the popular shrine of "frenzied finance," subjected his body and mind to tremendous overpressure, and disregarded every opportunity for recuperative repair. Under such circumstances the inevitable must follow, as the human mechanism, like the industrial machine, cannot continue to operate indefinitely and at high speed without intelligent inspection and adjustment. In this case, the physical findings were essentially negative, except for the changes in the retinal arteries, which I now believe were not adequately appraised. His vital organs were seemingly healthy, and he looked well. There was no appreciable increase of blood pressure, and the ratio between the systolic and diastolic phases was normal. The symptoms he complained of had existed only two weeks, and since they closely resembled the ordinary subjective manifestations so frequently arising from undue stress and strain, the impression was made that the disturbance did not rest on an organic basis.

In the hope of profiting from this observation, I devised a plan five years ago for the purpose of carefully studying and reexamining, when necessary, patients more than 40 years of age, and especially men whose labors are largely mental—brain workers, so to speak.

Those patients who present a history of nervous agitation, irritability, chronic dizziness, fugitive head pains, etc., and who on examination are found to have palpable peripheral arteries, excessive or varying blood pressure, enlargement of the heart, kidney defects, and small, sluggish pupils, are not included in this group, as they are instances of advanced arteriosclerosis, which does not concern us now. Nor shall I refer to conditions arising from syphilis.

When the patient offers himself for examination, the personal as well as the ancestral history is cautiously scrutinized. Special inquiry is then directed to a tactful investigation of his emotional reactiveness, his temperament, his inhibitory power, his domestic and business relations, the nature of his diversions, and his attitude toward life in general and his environment in particular.

Very often a study of the personality alone will reveal certain morbid traits, which if not corrected or controlled, may engender serious complications. Mental maladjustments cannot of course be regarded original causes of cerebral arteriosclerosis, but they nevertheless produce high tension, and thereby operate as contributing or aggravating factors. Furthermore, many individuals tend to belittle, or even deny the existence of various irregularities in their lives; but, if the examiner is skilful and patient, he will usually encounter little difficulty in obtaining an accurate and dependable history. Sometimes the family physician is the one who holds the key to the situation, and his cooperation is always invaluable.

At all events, it is more important to know the mental characteristics of the subject than to understand properly the illness from which he suffers, and this point cannot be emphasized too strongly.

The physical examination is conducted in the usual routine manner and includes the central nervous system. No investigation is completed until a Wassermann test of the blood and spinal fluid has been made and the condition of the kidneys ascertained.

Invariably the early signs of arterial disease consist of increasing restlessness, fatigability, insomnia and apprehension, and when the vital organs are apparently healthy and the blood pressure not disturbed, these manifestations may be interpreted as the expression of brain fag, or functional nervousness. In my experience, a diagnosis of this sort is never warranted when the patient is over 40 years of age, until repeated examinations have been made, including an ophthalmoscopic study of the eyegrounds.

When the heart appears to be normal in size and position, and especially when the patient has been subjected to sustained mental effort, it is a good plan to observe the behavior of the pulse when he is in a reclining, sitting and standing position, and after moderate exertion. By this means, it is sometimes possible to elicit early cardiac changes which otherwise might be overlooked.

The blood pressure is always an important factor in the diagnosis of circulatory diseases, and yet in many instances, during the incipient period, the readings may be entirely within the normal range. It is also common knowledge that cardiovascular tension is subject to many variations and may be affected by conditions that are purely physiologic. A heavy meal, a night of dissipation, undue excitement, emotional upheavals, and even muscular exertion may incite temporary changes. It is therefore advisable, when possible, to make two or more estimations for the purpose of verification.

In the public mind, the testing and evaluating of the blood pressure is an exceedingly simple task. On the contrary, it is a complex undertaking, as it involves several distinct phases, each possessing an individual significance and at the same time constituting an inseparable part of the problem as a whole.

The maximum force exerted by the systole of the left ventricle constitutes the systolic pressure, but is so variable that it seldom tells the whole story. The diastolic estimation measures the peripheral resistance, is fairly constant, and is therefore a better index of hypertension. The pulse pressure determines the motor power of the heart, and cannot be computed until the systolic and diastolic readings are available. In other words, the actual blood pressure level is the sum total of these elements, studied by the auscultatory method, and in the light of their reciprocal relations.

It is also influenced by other circumstances, and in this connection an intelligent knowledge of the human circulation in health and disease is indispensable. An habitually low systolic pressure, for instance, is not necessarily pathologic in one whose sympathic nervous organization is unstable or fatigued. Furthermore, a moderately high estimation in a full-blooded, overactive adult may be unimportant. On the other hand, hardening of the arteries may be present in a chronic form and give a low blood pressure rating. In advanced years, when the blood vessels are as hard as pipe stems, this is often the case. Then again, the sphygmomanometer may register a high systolic pressure long before the clinical signs appear.

It is therefore plainly evident that the estimation of cardiovascular tension is always a serious responsibility, and, if errors are to be avoided, every precaution must be exercised in carefully weighing, comparing and verifying each observation.

In recent years, blood pressure instruments have been so simplified that almost every masseur, physical culturist and irregular practitioner is now prepared to make the test. Usually their findings are estimated

from the systolic readings alone and are therefore of little value. The general public, however, seems to regard the sphygmomanometer as infallible. At least, it accepts these unconfirmed deductions as trustworthy and final. As a consequence, many cases of incipient arterial disease are permitted to pass unheeded at a time when remedial measures would prove most helpful.

TREATMENT

The therapeutic management of these interesting conditions is largely prophylactic; and, as no two cases are identical, either in their original development or in their symptomatology, it is obvious that no single, unchanging formula can be devised that will prove beneficial in all instances. Naturally, many factors are to be considered in a problem of such magnitude, but this much is true: that the increasing incidence of cerebral arteriosclerosis is the price we pay for the increasing rapidity of our national life.

We are indeed a nervous, restless people, chafing under delays and disappointments, and imposing on our physical organisms work far beyond their strength. In the larger centers of population, life has become so artificial that many are leading improperly balanced lives, with a tendency to overindulgence that few can afford. It is therefore little wonder that men of affairs are breaking down, or aging prematurely, under the terrific strain to which they are repeatedly exposed.

But there is some consolation in knowing that, without danger, one can pursue a strenuous pace, provided his nervous and restless personality is at the service of a good head and a good heart. Much also depends on the material out of which he is constructed. Those who possess arteries of inferior quality are necessarily more susceptible to the ravages of wear and tear than those who are blessed with a flawless constitution.

Arteriosclerosis may arise from numerous causes; but when it chooses the blood vessels of the brain for its field of operation, the etiologic significance of prolonged mental and physical abuse stands out most prominently.

In this rapidly moving age, many vigorous and well balanced persons allow themselves to be undermined by moral and intellectual overpressure. In their mad rush for material gain, they prolong their exertions far beyond reason, and the nerve-racking effect of this is intensified by the worry caused by an end to attain, the fear of failure, which perpetually confront them. On the other hand, a large number of those who develop cerebral arteriosclerosis are inherently nervous or emotionally unstable and are therefore poorly equipped to combat the strain and stress which everywhere abound and which few can escape.

It has been my observation that nervously constitututed people are peculiarly apt to subject themselves to such influences as are most likely to accentuate their weaknesses and make them realities. Many of them, for example, crave excitement, totally unmindful of its dangers and pitfalls. Others encourage ambitions which are seldom justified; and the physical deterioration incident thereto is the regrettable penalty exacted for defying nature's law. It is a wise man who appreciates his limitations and governs himself accordingly.

When the diagnosis is finally established, it is advisable to inform the patient frankly of his actual condition and impress on him in positive terms that the overactivity that has characterized his career is the outstanding cause of his disturbed sense of well-being, and if it is permitted to go on, his health and happiness will be seriously and perhaps irreparably harmed. He must realize, moreover, that the future is largely in his own hands, and that if he is willing to cooperate and avoid excesses in all things, and maintain a rational balance between work and play, the progress of the malady may be postponed. One should make no compromises with such patients, or one will fail in one's mission, which is to appeal to their reason.

In reality, the treatment of incipient circulatory disorders is a moral reeducation. A new personality is to be substituted for the old, and in order to accomplish this the physician must be armed with all the skill, diplomacy and tact that he can command. It is a slow-going process, to be sure; but if the patient is intelligent and one has his confidence, it is possible very often gradually to break up faulty habits of living, eating and doing, no matter how deeply entrenched they may be. It is nothing but the application of a common sense philosophy.

The mode of procedure is not unlike an argument in a court of law. One knows one's case and all the facts involved. There are numerous obstacles and technicalities to be overcome before the judge is convinced and the verdict is ours. Professional stratagems are as necessary in medicine as they appear to be in law.

In this connection it is well to emphasize that those who have persistently and conscientiously endeavored to treat arteriosclerotic patients by the skilful application of approved physical measures only, and have not succeeded, have missed the mark because the problem was attacked from the wrong angle. They treated symptoms and overlooked the patient.

Physical exercise also is an indispensible feature in our campaign of prophylaxis, but it must be intelligently directed to meet the patient's needs. If carried to extremes, it may become a positive handicap, rather than a help. In other words, there are temperate methods of exercising, as well as of eating and drinking. Every one, however, should arrange a plan of his own which will not make it a hardship to keep himself in trim.

A simple and successful method is that of morning exercises followed by a cold shower. Its effect is always stimulating. Very often the active brain worker finds it difficult to relax after a strenuous day. In such cases, a warm bath, preceded by a brief period of setting-up exercises, will usually relieve the tension and induce sleep. The so-called Turkish and Russian baths are contraindicated in persons affected with arterial disease.

The growing popularity of outdoor sports, and more especially golf, augurs well for the preservation of vigorous constitutions, and is undoubtedly an invaluable asset in prolonging the lives of those whose arteries have been blighted by the strain of overpressure.

It is a companionable game and takes the player into the fresh air for hours at a time and away from all business contact. Unless the links are hilly or mountainous, it is the ideal recreation for one who has never exercised and is therefore overweight. Tennis, rowing, swimming and bowling are too violent for persons past middle life, unless their physical constitutions are robust and sound. Horseback riding, canoeing and fishing can be heartily recommended as wholesome and invigorating diversions.

Indoor exercises are now in popular favor, and, when wisely supervised, they supply a much desired want, particularly during the winter months. No one, however, should be allowed to engage in unusual physical pursuits who does not possess an effective cardiovas-

cular system. I sound this warning because I have witnessed on several occasions alarming heart complications following gymnastic contests. In every case the individual was classified as bodily fit by an overenthusiastic physical director, who drew his deductions from an alleged blood pressure estimation.

The dietotherapy of arteriosclerosis in the early stages is principally a question of moderation. No possible advantage is gained by placing the patient on a rigid diet. On the contrary, he should partake of foods compatible with his idiosyncrasies, and avoid by all means dietetic whims and fads. Overeating, especially of meat, is of course a national transgression, and when more food is taken than is necessary to sustain the body and mind, a heavy burden is placed on the heart and circulation, through the digestive organs, which may precipitate serious consequences. If the subject has led a sedentary life, or is engaged in labor that is largely mental, the best results will be obtained by limiting the amount of protein and substituting a vegetable, farinaceous and milk diet. Care should be taken, however, to avoid a caloric reduction below the patient's requirements, as it is impossible to strengthen enfeebled arteries without sufficient nourishment.

Alcohol, when taken to excess, is unmistakably a constant menace to the best interests of mankind; but there is no scientific evidence available to warrant the indictment that its moderate use is an active and important cause of arterial decay. Furthermore, inebriating beverages invariably lower the blood pressure; and, in chronic alcoholics, arteriosclerosis is not a common complication.

The imbibing of spirituous liquors before meals, particularly the modern cocktail, which is diluted with heavy syrups and fruit juices and served in large quantities, should be avoided, as it tends to encourage overeating, with its resultant alimentary disturbances and autointoxications.

From a medicinal standpoint there is no remedy at our disposal that is capable of arresting the process of wear and tear. It is possible, however, with certain drugs to reduce the blood pressure, but the result is usually temporary. In certain patients, the iodids seem to exercise a most helpful influence; at least, many patients with hypertension feel more comfortable under its use. In my hands, digitalis has proved more efficacious than any other remedial agent. Its salutory action on the circulation and renal functions is always desirable, and in some instances it serves to stabilize the blood pressure. It is exceptionally beneficial in the treatment of hypertension.

The habitual use of sedatives is mentioned only to be condemned. There are times, nevertheless, and especially during trying crises associated with profound nervous unrest, troublesome insomnia and excessive tension, when it is absolutely essential to depend on an emotional quieter. When judiciously perscribed, no ill effects can possibly ensue.

PREVENTION

The study of this group of cases not only has been extremely interesting but also has clearly demonstrated that cerebral arteriosclerosis is more prevalent than is usually conceded; that the condition is increasing; that the ophthalmoscope is frequently the only means of eliciting the first objective signs; that the blood pressure readings may be entirely normal during the developmental stage; that regular examinations are requisite and necessary if early diagnoses are to be made, and that the progress of the malady may be stayed if modern prophylactic methods are instituted promptly and persistently pursued.

One of the most gratifying features of this undertaking has been the faithful and painstaking manner in which most patients have cooperated; and, while the number of cases under treatment and the period of their observation has not been sufficient to justify statistical data, the results so far achieved have far exceeded my utmost anticipation.

In reality, the prevention of apoplexy is a plea for a sane and rational mode of living. Men or women who have gone the pace, so to speak, and whose arteries are crumbling under the strain, must realize that unless they halt and take regular inventory of their physical and mental assets, disaster will prematurely come to them. I also believe that the time is not far distant when all reasonable people will appreciate the importance of regular health examinations. Only in this way is the prophylaxis of arteriosclerosis possible.

Finally, I may add that none can escape growing old provided they live long enough, but the condition of presenility, when detected early, can be deferred by directing the activities of the patient along wholesome and healthful channels.

The service of lifting mankind to higher planes of living, and reducing to a minimum the sordid misery and needless infirmities arising from presenility, is a phase of preventive medicine that concerns the neurologist. Each and every one of us should be prepared to shoulder the responsibility.

The Rose Building.

ABSTRACT OF DISCUSSION

DR. GEORGE A. MOLEEN, Denver: I am pleased to note the emphasis Dr. Drysdale placed on the importance of cerebral arteriosclerosis. We are in the habit of regarding these cases as hemiplegia and pass them by, assuming that the pathologic changes are the result of an irremediable condition; but, as Dr. Drysdale has pointed out, many measures of relief can be instituted. The sphygmomanometer in the hands of an inexperienced person appears to be in the same position as a hairspring in the hands of a boilermaker. The readings are unreliable. Blood pressure readings vary a great deal unless taken with great care. Therefore, one must be careful in assuming the correctness of the systolic pressure, to say nothing of the diastolic pressure, which often is not recorded. Arterial pressures vary within rather wide limits in the presence of arteriosclerosis. This may be due to the presence of a mild carditis from some other cause, or a dilated heart may account for it. Thus an otherwise frank cerebrospinal neurosis may be overlooked. As Dr. Drysdale has pointed out, the most important findings are in connection with the cerebrospinal nerves. There we have the branches of the basal arteries, and they will manifest the same general atheromatous state that one finds in the general cerebral circulation. As to the use of digitalis in these cases, one would, I think, have to be a little cautious. If the arteriosclerosis and the hypertension arose from restriction in the capillary field, digitalis might be a good deal more risky than other remedies, particularly rest. I do not believe, and Dr. Drysdale has already voiced that opinion, in lowering the blood pressure, which I think is equally dangerous. A lowered pressure in a hypertensive patient who has atheroma leads that patient into the danger of neurothrombus. The thing we have to avoid is suddenly lowering the pressure in a vessel that is sclerosed, or in a vessel that is exposed to environmental influence.

DR. H. H. DRYSDALE, Cleveland: The only thought I had in presenting the paper was to urge more careful means of detecting the first signs of arteriosclerosis. The overworked man, whom we call the nervous man, is, in fact, developing cerebral sclerosis. Slow him down. We have no right to

stop the spirit of ambition within him; but if we can control him so that he will live longer and get more comfort out of life, we should do so. Some men would be willing to die at 30, if they could only accomplish a certain thing; but it is our duty to detect cerebral arteriosclerosis early and thus save these men from the inevitable result if the disease is allowed to progress. Regarding Dr. Moleen's remarks, we sometimes find a low blood pressure in cerebrospinal neurotics. That is one point which the use of the ophthalmoscope will help to straighten out.

SEVERE REACTIONS AND FATALITY WITH KOLMER'S TECHNIC

FOR INTRASPINAL INJECTION OF AUTO-ARSPHENAMINIZED SERUM

CHARLES E. KIELY, M.D.
CINCINNATI

In 1920, Kolmer [1] advocated intraspinal injection of auto-arsphenaminized plasma rather than serum, by the following technic:

Six-tenths gram of arsphenamin is administered in exactly 200 c.c. of sterile saline solution after the removal of 1 c.c. (0.003 gm. of arsphenamin) for subsequent fortification. Immediately after injection, 25 c.c. of blood is drawn from the patient's arm and expelled into a 50 c.c. centrifuge tube that contains 4 c.c. of sterile 10 per cent. sodium citrate in physiologic sodium chlorid solution to prevent coagulation. The blood and citrate solutions are mixed and promptly centrifugated, and then 10 or 12 c.c. of the plasma is removed. To this is added 0.1 c.c. of the solution of arsphenamin, previously set aside. This plasma is therefore fortified with 0.0003 gm. (⅓ mg.) of arsphenamin. The mixture is inactivated at 56 C. for thirty minutes, and then injected into the spinal canal, after removal of 30 c.c. of spinal fluid. The foot of the bed is elevated.

Kolmer reports that "in every instance the patient has been able to leave the hospital the following morning feeling no ill effects except the soreness resulting from the needle punctures." He does not state the extent of his experience with this method.

He mentions the following advantages over the other technics:

1. The patient receives both intravenous and intraspinal treatment.
2. Higher arsenic content of the plasma is obtained, because blood is drawn immediately after intravenous treatment.
3. The whole procedure is shortened to two or three hours.
4. The difference in the amount of fluid drawn from the subarachnoid space reduces spinal pressure, and gives partially the effect of spinal drainage, which is believed to encourage transudation of arsenic from the blood stream to the nervous tissues.

In reciting the contraindications for this method, Kolmer mentions but one instance of unfavorable reaction, and so vaguely, that one can only conclude that this case showed a reaction with chills and flushing due to the method of intravenous injection. One does not gather that he had any trouble due to the intraspinal part of his procedure. The article contains no warning of dangers from impure citrate.

In the year this technic was brought out, I employed it on a patient who had received, without unusual reaction, several intraspinal injections by the Swift-Ellis method. A few hours after the intraspinal injection, this patient complained of excruciating pain all through the body, became delirious for about one-half hour, and showed a temperature as high as 103 F. When seen the following morning, he had made a complete recovery from this episode. Subsequent intraspinal injections by the Swift-Ellis method were uneventful. Not knowing the possibility of the toxicity of citrate, I made no investigation of the purity of the sample employed, but did not continue to employ the Kolmer technic.

April 30, 1923, four male patients were admitted to the Cincinnati General Hospital for intraspinal treatment. Because we were pressed for time, the Kolmer technic was adopted. The intravenous injection was entrusted to an intern. On my orders, neo-arsphenamin was used, but the serum was not fortified. The serum of one patient was lost by breakage of a centrifuge tube, so no spinal injection was made. This patient had no reaction of any kind. While we were finishing the last of three injections, a nurse reported that the first patient, whom we had sent back to bed not more than twenty minutes previously, was in collapse. On reaching his room, which was close by, we found him moribund. Respiration was gasping, skin very cyanotic, perspiration profuse, pulse thready and almost imperceptible. The second patient meanwhile was found in a similar condition, cyanotic, with thready pulse and profuse perspiration, but he was semiconscious and in an active mumbling delirium. The third patient, who had been given an injection only five minutes before, was now brought from the treatment room wildly delirious, shouting and resisting, but without the physical signs of collapse. All were stimulated with repeated injections of epinephrin and caffein sodiobenzoate. The first patient died within five minutes of the time his collapse was reported. The second recovered in about four hours, and went off to sleep. Six days later, he was noted to have a temperature of 100 F., moist râles and tubular breathing over the base of each lung. On the ninth day, against the advice of the physician in charge, his wife removed him from the hospital, and he died in the ambulance. A retention of urine which persisted after the lumbar puncture cannot be positively ascribed to the treatment, as he spoke so little English that no history could be obtained. The third patient, who showed only delirium, recovered in two hours and was discharged on the seventeenth day in good condition.

Clinically, the first case was diagnosed as general paralysis, the second and third as cerebrospinal syphilis, and the last two showed albuminuria in specimens received after the treatment. No specimen had been received before treatment because of the short period elapsing after admission.

Necropsy was obtained in the first case. The anatomic diagnosis was: active syphilitic leptomeningitis and cerebral syphilitic endarteritis; inequality of pupils; incised wound over the heart; [2] collection of chancre scars on the penis; atherosclerosis of the aorta; syphilitic (?) pulmonary and splenic congestion; slight chronic gastritis; chronic duodenitis; possible subacute parenchymatous nephritis. The blood failed to clot.

The heart chambers were not dilated, but were full of dark blood, which remained unclotted throughout the necropsy. The lungs were unusually dry. The necropsy of the head showed uncoagulable blood, as before. There was no subdural fluid. The pia over the cerebrum was moist and definitely opaque, particularly along the course of the vessels, where small, irregular,

1. Kolmer, J. A.: A Method of Treatment for Neurosyphilis, J. A. M. A. 74: 794 (March 20) 1920.

2. Intracardiac injection of epinephrin had been attempted for stimulation after his collapse.

yellow tinged areas were seen. The pia at the base was normal. The circle of Willis and, more markedly, its branches, showed "localized opaque nodular thickenings," from light gray to yellow. The ventricles were slightly dilated and their fluid slightly opaque. The ependymal vessels were slightly enlarged. The vessels seen on the cut surfaces of the cerebrum were also slightly congested.

Immediately after the accident, we began an investigation of its cause. The technic had been faithfully followed by the intern, as outlined by Kolmer, with the exception of fortifying the plasma as noted above. The actual citrate solution employed was exhausted in the preparation, but a sample of the crystals from the same package was obtained in the drug room. We soon learned that about one week previously there had been a sudden death when this citrate was used for transfusion in another service. The intern had unfortunately failed to report this accident at the time. It is important to note that the package bore the name of a widely known drug house and was marked "highest purity U. S. P." We also found that three of the patients had been treated with neo-arsphenamin from tubes of the same lot number and one from a tube of a different lot; but, as it had not been a practice to record the lot numbers, we are unable to say which of the four received this sample.

Samples of the sodium citrate and of blood, spinal fluid and ventricular fluid obtained at necropsy were submitted to Mr. John V. Lawrence, of the department of pharmacology of the University of Cincinnati.

The citrate sample showed only sodium bicarbonate as an impurity, but Mr. Lawrence reported that its degree of alkalinity was far in excess of the U. S. Pharmacopeia requirements. The hydrogen ion concentration of a 1.3 per cent. solution of the citrate gave a p_H value of 9.0, while the control sample made from Kuhlbaum's medium grade gave a p_H of 7.1.

Mr. Lawrence's report calls attention to the normal p_H value of spinal fluid, which is 7.4, and expresses the opinion that the intraspinal injection of a 9.0 solution would cause a severe reaction in a normal person, and that in patients with thickening of the meninges the reestablishment of hydrogen ion balance would be more difficult. I quote Mr. Lawrence's final conclusion verbatim: "Direct cause of death, injection of a toxic citrated plasma of a hydrogen ion concentration so different from that of normal spinal fluid that there was no chance of reestablishment of normal interchange of fluid from blood and vice versa. (The buffer action of the spinal fluid is very small and it must depend almost wholly on the blood for balancing of hydrogen ion concentration.) The reestablishment of normal equilibrium was abnormally retarded by active syphilitic leptomeningitis. The patient also suffered from cerebral syphilitic endarteritis."

628 Elm Street.

Intestinal Resection on the Wane.—Resection of some portion of the intestinal tract, whether of the cecum alone or of the whole colon, is tending to have a more and more limited field; like many other surgeons, I find that I am performing this operation very infrequently. In my opinion, it should be limited to extreme cases in which the colon is not only low, but also very atonic. It is an operation which is associated with a considerable mortality, and therefore it will not often be justified as a form of treatment for a condition which, although very disabling, does not in itself lead to the death of the patient.—A. J. Walton: *Lancet* **2**:1337 (Dec. 22) 1923.

THE REACTION OF ABDOMINAL TUMORS TO RADIATION *

ARTHUR U. DESJARDINS, M.D.

ROCHESTER, MINN.

The principles governing the effect of radiation on tumors in general apply with equal force to tumors within the abdomen. The only differences between tumors involving an abdominal organ or structure, and tumors arising elsewhere in the body, are such as may be due to differences in type and degree of specialization, and in anatomic, chemical and other metabolic relationships, including the distribution and supply of tissue fluids.

The term "selective," frequently used to describe certain qualitative characteristics of roentgen or radium rays, is a misnomer, because radiations do not possess true selective power. Any differential action exerted by rays of a given type depends on the cellular sensitiveness of the tissues exposed. For instance, the pronounced and rapid destruction of the spermatogonia of the testes and of the circulating lymphocytes under a given dose of radiation is in striking contrast with the failure of a like dose to produce a similar effect on the heart muscle. Hence, while we are entitled to speak of the specific radiosensitiveness of different normal or pathologic tissues, we are not justified in speaking of such phenomena as due to a selective action of the rays.

That exposure to radiation produces more or less pronounced changes in cells of different types has been known for a long time. The classic experiments of Bergonie and Tribondeau, of Regaud and Regaud, and Blanc, Hudellet, Regaud and Lacassagne, Richards and many others, have established not only the fact that the testis and ovary are extremely sensitive to radiation, but have also furnished much information concerning the mechanism of such action. The studies of Aubertin and Beaujard, S. Russ, and others have shown that the cellular elements of the blood also are peculiarly susceptible to radiation, although the mechanism of such action on the blood corpuscles has not been so clearly elucidated. However, there is a distinct difference in radiosensitiveness between the cells of the genital glands and those of the blood, but this difference is one of degree rather than of kind. Furthermore, the different types of blood corpuscles vary greatly in radiosensitiveness, one from another, the circulating lymphocytes being far more susceptible than any other forms.

In studying the radiosensitiveness of different types of tumors, it is found that they likewise vary within fairly wide limits, and that the sensitiveness of any one type corresponds more or less closely with the sensitiveness of the normal cells from which they are derived. On the basis of much experimental and clinical evidence, different types of normal tissue cells may be graded for sensitiveness to radiation as follows:

Genital glands: seminal epithelium or testis, especially the spermatogonia; germinal epithelium of ovary.
Blood: lymphocytes; polymorphonuclear neutrophils.
Spleen and lymphatic glands (lymphocytes).
Mucous membranes (intestine, bladder), skin: epithelium.
Liver.
Kidney.
Muscle.
Bone.
Nerve tissue.

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* From the Section on Radium and Roentgen-Ray Therapy, Mayo Clinic.

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Fifth Annual Session of the American Medical Association, Chicago, June, 1924.

The difference in sensitiveness between the extremely sensitive spermatogonia, on the one hand, and the markedly resistant nerve tissue, on the other, is very great. Small doses of relatively "soft" roentgen rays produce very definite changes in the former, while to bring about even slight changes in the latter requires comparatively heavy doses of radium rays. It was through experiment on genital gland epithelium that much of our present knowledge of the action of the radiations was obtained. We thus learned that the sensitiveness of cells in general occurs in cycles corresponding with the phases of mitosis; that the period of maximal sensitiveness is around the metaphase; that, owing to the sequence of the various phases of the mitotic process, a definite interval (latent period) occurs between the exposure to radiation and the first observable histopathologic evidences of cellular reaction, this latent period varying with the rate of mitosis, and that the resting stage of the cell is one of relative resistance to radiation (as it is to other factors). All these facts, obtained and verified by carefully controlled experimentation, constitute the very principles on which the radiologic treatment of many pathologic conditions is based. Another fact of capital importance is that, owing to the increased rate at which the mitotic cycle takes place in the various types of malignant neoplasms, the cells of such new growths are, generally speaking, more sensitive to radiation than the normal cells with which they are morphologically related.

Radiosensitiveness is undoubtedly influenced by other factors, many of which are not yet well understood. It is a matter of daily observation that tumors of the same general type often exhibit considerable variation in this respect. Differences in blood supply, in the tendency to produce anaplastic products, and bacterial infection, probably have much to do with such variations; but until these and other factors are better understood, much that occurs in and around a malignant tumor exposed to radiation must remain an enigma.

The manner in which radiation acts on tumor cells is another problem concerning which a great deal remains to be learned. While, from the standpoint of the practical radiologist, it may appear of secondary importance to know whether radium and roentgen rays kill cancer cells directly, or whether their destruction is the result of a complex cellular reaction involving the elaboration and action of ferments, immune bodies, and so forth, such knowledge is essential, and must be diligently sought. Little progress was made in controlling many infectious diseases until their true nature was discovered, and progress in the treatment of tumors must be delayed until we know more about their nature and how roentgen rays and radium produce in them the changes observed.

TUMORS DERIVED FROM TESTICULAR EPITHELIUM (SEMINOMA; MALIGNANT EMBRYOMA)

The genital glands in the male are not normally within the abdominal cavity, but tumors morphologically related to the cellular elements of the testis frequently occur in the abdomen in the form of metastatic foci; hence their inclusion within the scope of this discussion. The classification of Chevassu, that of Ewing, or those of other pathologists who have written on the subject matters not a great deal, since the pathologists themselves are sometimes unable to distinguish between sarcoma and carcinoma of the testis. According to Ewing, the most common type of malignant tumor of the testis is the malignant embryoma, a term that does not differentiate tumors derived from the seminal epithelium and those arising from the testicular connective tissue. Chevassu attempts such differentiation and calls the one, seminal epithelioma, or seminoma, and the other, sarcoma, in accordance with consecrated usage.

The malignant embryoma of Ewing (or the seminal epithelioma of Chevassu) has a strong tendency to metastasize by way of the lymphatics draining the testis; that is, along the spermatic vessels to the juxtaaortic glands. Not infrequently, metastatic elements are carried to the region of the receptaculum chyli, and thence to the inner group of left supraclavicular nodes. Such abdominal metastasis frequently results in voluminous tumors in the umbilical, epigastric or hypochondriac regions. In a few cases, dissemination through the venous circulation occurs, and then the lungs or, indeed, almost any part of the body may become involved. True to their type, such tumors are almost always extremely sensitive to radiation, and the rapidity of their regression, following even moderate doses of radiation, can be made use of in classifying a given tumor. Indeed, this recession is so striking that one wonders why it is not more commonly considered as a means of distinguishing between the connective and epithelial tissue tumors derived from the corresponding germinal elements of the testis. Large tumors of this type, producing more or less marked pressure phenomena, melt away with astonishing rapidity. No other abdominal tumor displays such a marked susceptibility to an initial dose of roentgen rays or radium. If the course of roentgen-ray treatment is distributed over a period covering several days to a week or more, it is not unusual to observe during such a period a distinct reduction in the size of the growth, rapidly followed by a corresponding improvement in the general condition. Complete clinical regression and restoration of health are common results of adequate treatment during the earlier stages in the development of such tumors. However, such regression is but temporary; it may continue for months or even several years, but recurrence invariably occurs. Treatment of such recurrences is again followed by regression; but as the treatment is repeated, the effect of radiation becomes gradually less and less pronounced. This is undoubtedly the expression of an increasing resistance on the part of the cells, either as a direct result of repeated exposure, or indirectly as the intercellular and perivascular fibrosis accumulates in the tumor. None of the tumors known to occur in the ovary manifest the extreme radiosensitiveness seen in tumors derived from the seminal epithelium of the testis. The reason for this may be that, in the ovary, the cellular cycle leading to the formation and maturation of the ova does not take place at anything like the rate of the corresponding cycle in the testis. The process is more leisurely, because the number of ova produced in the female gland is infinitesimal as compared with the vast numbers of spermatozoa elaborated in the male gland. By far the most common tumors of the ovary are of epithelial derivation, which is to say, carcinomas, and react to radiation like similar tumors in other organs.

LYMPHOMAS AND LEUKEMIAS

The group of lymphomas and leukemias includes Hodgkin's disease, lymphosarcoma, leukosarcoma (Sternberg) and the leukemias, myelogenous and lymphocytic. They are sometimes classified as varieties of sarcoma involving the lymphatic elements of blood, spleen and lymph nodes, but they differ sharply in their behavior from the traditional forms of sarcoma when subjected to radiation. The normal spleen and lymph

nodes are little affected by radiation under ordinary conditions, but when for any reason they are in a state of hyperplasia, they become markedly susceptible. In sensitiveness, they then come immediately after the testicular epitheliomas, and should be classed quite apart from the general sarcoma group.

Hodgkin's Disease.—This generally invades the abdomen as a relatively late manifestation, usually some time after the superficial cervical and axillary and the mediastinal gland groups have become affected. Such dissemination commonly attacks the retroperitoneal (juxta-aortic, mesenteric) and biliary, but occasionally also the lymphatic patches in the bowel wall. This is often accompanied by pressure phenomena; hydroperitoneum, edema of the lower extremities and intestinal obstruction. Such abdominal extensions commonly yield to radiation, sometimes to the extent of complete clinical regression, but the rate of such recession varies to some extent. The chief factor in the variation appears to be the time relation between the primary manifestations in the cervical axillary and mediastinal glands, and the secondary involvement of the abdominal gland groups. When abdominal invasion occurs early, the response to radiation is more prompt and more nearly complete: if late, it is more sluggish and never thoroughgoing. As the disease progresses, the involved glands tend to become more fibrotic, and this tendency, together with anemia and general lowering of body metabolism, causes radiation to have less and less effect.

Lymphosarcomas.—Such tumors seem to start on their nefarious career by attacking first the lymph nodes along the abdominal aorta, in the mesentery and along the biliary channels, causing obstructive phenomena in many respects similar to those seen in the Hodgkin type. However, since lymphosarcomatous proliferations of the abdominal lymph nodes occur generally at an earlier stage of the disease than in the Hodgkin variety, exposure to radiation may be followed by a response comparable with that observed in the earlier cervical, axillary or mediastinal manifestations of the latter condition. This is not invariable, however, because the reaction is greatly influenced by the extent of such involvement and the damage already done by it.

Leukemias.—The radiosensitiveness of the spleen or lymph nodes in the leukemias is well known. An enormously enlarged spleen exposed to even moderate doses of roentgen rays or to radium often diminishes in size with astonishing rapidity. The glands in the lymphocytic type generally react quite as actively as the spleen in the myelogenous type, especially if the exposure is the initial one. The mechanism is, at least in part, fairly well understood; it involves in the spleen, glands and circulating blood, the rapid disintegration of large numbers of lymphocytes, such destruction being gradually replaced by newly formed lymphocytes and connective tissue. With each successive exposure, the reaction gradually becomes less pronounced, as the result of the increasing resistance of the lymphocytes and the accumulation of connective tissue. This explains why the primary results in leukemia are truly remarkable, why the improvement is only temporary, and why, as the number of exposures increases, the response of the structures subjected to radiation becomes less and less pronounced. Finally, a stage is reached when even intense radiation produces little or no effect. The intimate relationship of the cellular elements of the bone marrow with the metabolism of the blood corpuscles, although imperfectly understood, is undoubtedly concerned in the leukemias.

These considerations apply only to the chronic forms of leukemic dyscrasia, because in the acute forms the pathologic process is so active as to make it difficult or impossible to observe the sequence of events. Leukemia is a general disease, and such abdominal features as are encountered (enlargement of the spleen and lymph nodes) react in the same manner as corresponding manifestations in other regions.

MYOMAS

While much less sensitive than the foregoing types, tumors made up of actively proliferating smooth muscle cells are distinctly more sensitive than tumors derived from connective tissue or epithelial cells. The variety so common in the uterus, either as the simple myoma or that more or less mixed with fibrous tissue, is quite susceptible to radiation. This depends to a considerable extent on the proportion of fibrous tissue present, although the activity of the ovaries must necessarily play an important part. Certain myomas undergo complete regression and disappear in the course of a few months; in others, only partial regression occurs even after heavy radiation. It is probable that the proportion of fibrous tissue has much to do with such differences. In the rare cases in which calcification has taken place, it would be folly to expect much reduction in the size of the myoma. The close functional interrelationship between the uterus and the ovaries makes it difficult to interpret with certainty the exact influence of radiation. Whether the regression of myomas and fibromyomas following radiation is due to a direct effect on the tumor cells, or to an indirect action consequent on the changes produced in the ovary, remains unsettled. It is probable that vascular changes and atrophy, the result of diminution or absence of ovarian function, have much to do with the changes observed.

SARCOMAS

Malignant neoplasms derived from connective tissue are moderately radiosensitive, though far less so than either the seminal epitheliomas or the lymphomas. Their high degree of malignancy, due partly to their common occurrence in relatively young persons, partly to a high degree of vascularization and to a marked proliferative activity, accounts in large measure for their susceptibility. Since the rate of mitosis is one of the chief factors in determining the relative resistance of tumors to radiation, sarcomas, theoretically, should be, and actually are, comparatively sensitive. However, the metabolic activity of such tumor cells, of which the rate of mitosis is but an expression, is largely, if not entirely, governed by its blood supply. Therefore, while an abundant supply of blood leads to great mitotic activity and indirectly to an increased susceptibility to radiation, it also gives to the tumor great growth momentum, which neutralizes, in a measure, the advantage of a high rate of mitosis. Because of their vascularity, sarcomas are also prone to metastasize by way of the blood stream. Such dissemination of tumor cells undoubtedly occurs much earlier than is commonly thought; so that, while the primary growth may be responding to a strong radiation attack, a distant focus may be in process of formation elsewhere. The true state of affairs may not be evident for a time; the health of the host may actually improve to some extent as a result of the decreased activity of the primary focus brought about by radiation. However, as soon as the areas of metastasis have reached sufficient size to make their presence felt, the tide again turns, and the most heroic efforts are all too commonly unavailing.

It is not uncommon for a sarcoma or, indeed, any tumor to pass through periods of relative quiescence and, after an interval of varying length, to burst out afresh into renewed activity. This may be observed in a portion of the growth only, or the activity of the entire tumor may be reduced. Such a phenomenon may result from circulatory interference (thrombosis) affecting a part or all of the tumor. As a rule, such quiescent periods are but a temporary phase, but in some cases may continue until the patient dies. It is not rare to see a tumor which has been growing rapidly and steadily become less active or, to all outward appearances, actually stop growing. In some instances this is a result of lowered body metabolism due to rapidly failing health; in others, to local changes within or around the tumor. Therefore, in interpreting changes occurring in a neoplasm following exposure to radiation, all these possibilities must be borne in mind.

True sarcomas in abdominal organs or structures are comparatively uncommon. A certain proportion of those encountered spring from some part of the skeleton, and are seen in the abdominal cavity as growths projecting from the pelvic or spinal bones. The radiosensitiveness of such connective-tissue growths depends more on their morphologic characteristics than on the organ in which they may be located; in other words, there is a far greater difference in sensitiveness between a round-cell and a chondrosarcoma or osteosarcoma, than between a sarcoma of the ovary and one in some other part of the abdominal cavity. Thus, a small round-cell sarcoma may react very distinctly to radiation, and, were it not for the tendency to metastasize early, we might hope to cure a certain number of them. As it is, in a certain proportion the primary neoplasm can be dealt with more or less successfully; a considerable degree of regression can often be obtained, and the general condition of the patient may be much improved, but as in all cases of sarcoma, metastatic dissemination generally supervenes to defeat one's efforts.

The spindle-cell and mixed-cell sarcomas are somewhat less radiosensitive; and the myxosarcomas, the chondrosarcomas, and the osteosarcomas, are, in the order named, progressively more resistant. Few chondrosarcomas and osteosarcomas can be influenced to any great extent, although some of them undergo distinct regression following exposure to heavy doses of roentgen rays or radium.

CARCINOMAS

Carcinomas in general are even less susceptible to radiation than the sarcomas; however, this will bear qualification, because some carcinomas are certainly more radiosensitive than connective-tissue neoplasms derived from cartilage or from bone. Variations in cell morphology (type of tumor) and physiology (mitotic activity) have likewise more to do with the sensitiveness of carcinoma than difference in location (organ or structure involved). For example, the colloid type of carcinoma, although naturally slow growing, can be considerably retarded in its development; nor does this usually require very heavy dosage. I have seen patients with colloid carcinomas scattered throughout the abdominal cavity, and with marked deterioration of general health, recover in strength and weight and resume a normally active life for over two years, as the result of judicious radiation treatment.

The solid adenocarcinomas, on the other hand, are relatively unsusceptible. The progress may be temporarily retarded, but such inhibition is generally short-lived. These broad observations are subject to many variations.

The natural history of a given tumor, the degree of differentiation of its cells, and of natural resistance offered by the surrounding normal tissues, are all factors which must be considered in evaluating the effect of roentgen rays or radium. The tendency of carcinomas to spread by infiltration, to invade the lymph channels and nodes, and the tendency of the invaded normal tissue to counteract these tendencies by attempts to throw up a barrier of lymphocytes or of hyaline or fibrous tissue, must necessarily influence the action of radiation on the malignant cells.

In most cases, carcinoma of the stomach is but slightly affected by radiation. Furthermore, care must be taken not to concentrate the treatment into too short a period of time; otherwise, distressing radiation sickness may make the treatment worse than the disease. While this is true of the abdomen as a whole, it is particularly true of the gastric region. In a few cases, radiation produces a very distinct effect, both locally and generally. In fact, it is sometimes possible to obtain a clinically complete regression of the tumor. Unfortunately, this is rare, and there are no cases of permanent cure on record to my knowledge. Carcinoma of the pancreas behaves in much the same way. Although exceptionally it may be possible, under heavy doses of short wave-length roentgen rays, to cause the primary tumor to disappear as a clinical entity, recurrence or metastasis is the rule. The same is true of carcinoma of the bowel, bladder and, so far as my observation goes, of the kidney.

The comparative susceptibility of uterine carcinoma is well known, but the reasons for it are still lacking. It seems likely that the shape, accessible location, and abundant blood supply of the organ have much to do with the rather striking difference in reaction so commonly observed. The possibility of bringing the source of radiation in certain and close relation to the involved tissues constitutes an unusually favorable circumstance. This assumption receives some support from the fact that, although the ovary is normally much more radiosensitive than the uterus, ovarian carcinoma, with the possible exception of the colloid variety, is much less influenced by roentgen rays or radium than is a corresponding growth in the uterus.

With so many factors influencing the reaction of tumors to radiation still unexplained, one cannot but feel that the attempt to "standardize" roentgen-ray and radium dosage on the basis of a so-called sarcoma or carcinoma dose is distinctly unwarranted and premature. The way of progress lies rather in studying and classifying our cases from the standpoint of the factors influencing the action of radiation, and in collecting information concerning the relative importance of such factors. Instead of pouring our material into one mold, we must individualize and analyze cases, and plan our work on the basis of such analysis. Ready-made treatment can no more fit every tumor than ready-made clothing can fit every back.

ABSTRACT OF DISCUSSION

DR. GEORGE E. PFAHLER, Philadelphia: In 1920 I reviewed the results obtained by radiotherapy in 1,300 cases of extensive abdominal malignancy. Dr. Desjardins told of excellent results achieved, but also said that we must universally expect ultimate failure. I believe that is generally true, but undoubtedly there are exceptions, so that we need not take quite such a hopeless view of the situation. I believe that some of

these patients will get well. All of the cases I reviewed in 1920 were treated by fractional doses, not with massive doses. I believe that in cases of general abdominal tumors, particularly when the intestines are exposed, it is better to give fractional doses; just what degree is needed with our modern apparatus I am not sure, but these results indicate that, to do no harm and yet do some good, it would be better to give relatively fractional doses.

DR. I. S. TROSTLER, Chicago: Two cases of fibromyoma, in which the ovaries had both been removed, in one case about five years previously and in the other about three years previously, reacted very well to the ordinary roentgen-ray treatment for fibromyoma. One patient was aged 36, and the other 40. That, to me, is evidence that radiation has effect on the uterine rather than on the ovarian structures.

DR. A. U. DESJARDINS, Rochester, Minn.: I am sorry if the general impression has been rather vague, because that was not the intent. As to carcinomas: Some colloid carcinoma patients do especially well. One patient treated four years ago is very well. Four months ago he was still working. The case mentioned by Dr. Trostler is extremely interesting. I wish that more such cases were studied and recorded for reference, because it is only by getting evidence of that sort that we can ultimately settle the question.

SYMPATHECTOMY FOR ANGINA PECTORIS

A REPORT OF TWO CASES *

MONT R. REID, M.D.
AND
ALFRED FRIEDLANDER, M.D.
CINCINNATI

CASE 1.—A white man, aged 48, was brought to the General Hospital by the police ambulance, June 2, 1923. During a severe attack of angina pectoris he had fallen unconscious in the street.

For four and one-half years he had been suffering from attacks of angina pectoris, which had been growing more severe and more frequent. In the last year, he had had minor attacks of pain almost daily and a very severe attack every seven to ten days. In several of the severe attacks, he had lost consciousness but never before had fallen.

The pain was most severe. It began over the heart and extended upward and into the left arm, often as far as the fingers. With these attacks of pain, there was a feeling of impending death. A sensation of pressure or tightness over the heart was constantly present, though worse during the anginal attacks.

The patient's general condition was good. He was of normal stature and weight. There was very slight cardiac hypertrophy, but no evidence of decompensation. The heart sounds were clear. The pulse was normal in rate, and regular in rhythm and volume. The polygraphic tracing was normal. There was mild arteriosclerosis. The systolic pressure was 122; diastolic, 58.

Although there was no history of syphilis, the patient's blood gave a weakly positive Wassermann reaction. He had had several courses of vigorous antisyphilitic treatment.

June 7, 1923, an operation was performed by Reid. Ether anesthesia was employed. The operative procedure described by Jonnesco was used. The left sympathetic chain, including the superior, middle and inferior cervical and the first thoracic ganglions, was excised.

Throughout the operation, Dr. Friedlander watched the patient's general condition, particularly the pulse, face and pupils. Nothing unusual was noted.

On recovering from the anesthetic, the patient remarked that he was free from the sensation of pressure and tightness in the precordial region, and that there was less discomfort in his left arm. Since the operation, he has had no attacks of angina; the relief from the distressing discomfort in his precordium and left arm has been complete.

During the eight days that he remained in the hospital after the operation, we noted the usual things that happen after a cervical sympathectomy; ptosis of the eyelid, slight enophthalmos, and a contracted pupil. We were especially interested in any vascular changes in the left arm and face as a result of the sympathectomy. Nothing very unusual, however, was noted; neither hyperemia nor anemia was ever observed. The surface temperature remained normal. It was thought that the volume of the left radial pulse was larger than that of the right. On the sixth day, the blood pressure (systolic and diastolic) in the right arm was 164/85; the left, 142/75. On the eighth day, it was 148/80 and 136/78, respectively.

During his convalescence, he did not complain of any sensory disturbances. Since then, however, he has developed most astonishing sensory changes in the left side of his face, left arm and left chest wall. These changes, while not materially affecting the well-being of the patient, may throw considerable light on our imperfect knowledge of the function of the sympathetic nervous system. They are made the subject of a special study by Eckstein and Reid in the paper following this.

CASE 2.—An obese white man, aged 54, admitted to the hospital, Dec. 29, 1923, was very ill, cyanotic and short of breath; and he was suffering extreme pain over the heart and in the left arm. In the previous twenty-four hours, he had been given large doses of morphin and chloroform for his pain. The illness had developed rapidly, having begun only two and one-half months before admission. For several weeks, precordial pain had been present almost constantly, and during this time he had had many acute exacerbations. Precordial tightness (or pressure) was constant and distressing. He had been in bed for two weeks.

The pulse was 80, regular and of good volume. The heart was slightly enlarged; the cardiac sounds were clear. The temperature was 99.5 F.; the blood pressure, 140 systolic and 90 diastolic. The Wassermann reaction was positive.

On account of the patient's extreme suffering, he was operated on within a few hours after his admission to the hospital. A left cervical sympathectomy, including the superior and inferior ganglions, was performed.

For fourteen days following the operation, the result was almost miraculous. The precordial distress and pain were entirely relieved. The cyanosis disappeared. The wound healed promptly. He had been up and around the ward for five days, when, without any pain or precordial distress, he suddenly died. The following note was made by one of us (M. R. R.), Jan. 11, 1924, just before the patient died:

"The wound is well healed. A ptosis of the left upper eyelid and a contraction of the left pupil are evident. There is a slight enophthalmos of the left eye, and slight diminution in sensation in the region supplied by the fifth cranial nerve. There have been no anginal attacks, nor has there been any distressing precordial pressure since the operation. He is now up and around, regaining his strength slowly. The pulse is regular and of good volume; rate, 80. The left radial pulse seems a little larger than the right. The capillary circulation appears to be equally good on the two sides of the body. No unusual sweating is or has been noticed. The point of maximum impulse of the heart is just below and about 1 cm. lateral to the nipple. No shocks nor thrills are felt. The cardiac sounds are clear. The aortic second sound is louder than the pulmonic. The heart measures 12 cm. from the midsternal line to the nipple. On account of emphysema, the cardiac dulness cannot be accurately outlined. The blood pressure in the left arm is 124/76; in the right, 134/85."

After this note had been dictated, the patient was given some instructions as to what he should do after reaching home. When he left the room, the patient followed with the idea of taking a little walk. In the hall, he suddenly stopped and said that he felt very queer. He was hurriedly helped to bed, and quickly died. Before losing consciousness, he repeatedly said that he had no pain and that he could not understand what had happened.

* From the departments of surgery and medicine, University of Cincinnati College of Medicine.

COMMENT

It is now twelve months since Patient 1 was operated on. He has had no attacks of angina, and there has been complete relief from the precordial discomfort. His widespread sensory disturbances, however, have annoyed him considerably. The relief from pain and precordial discomfort in Patient 2 was very striking. He, however, died suddenly and painlessly two weeks after the operation. It is to be regretted that no necropsy was obtained. The rapid progress of the illness and the more or less constant pain make a diagnosis of coronary thrombosis not unreasonable.

These two cases may indicate that, in addition to relaxation of the coronary vessels, a factor in the relief of angina by sympathectomy is a diminution in the sensitiveness of the nerve endings in the heart. If this relief is due to an increased circulation of the heart muscle and a diminution in sensitiveness of the nerve endings in the heart, then there would appear to be ample justification for performing the operation in those cases in which coronary spasm is apparently the cause of the angina. However, if pain is a symptom of grave organic disturbance, then freedom from it may not be so desirable, for it would mean the removal of an important danger signal.

As it is so difficult to determine the true nature of angina pectoris, it becomes, we think, our duty to regulate most carefully the lives of patients subjected to sympathectomy. The second patient reported in this paper was undoubtedly permitted to get up too soon and to take too much exercise. A third patient, operated on three weeks ago, will be given a long period of rest, even though her angina seems to be mainly of the spastic or functional type.

SENSORY DISTURBANCES FOLLOWING SYMPATHECTOMY FOR ANGINA PECTORIS *

MONT R. REID, M.D.
AND
GUSTAV ECKSTEIN, D.D.S.
CINCINNATI

The patient on whom these studies were made was operated on by one of us (M. R. R.), June 7, 1923, the operation consisting in the removal of the entire left cervical sympathetic chain and first thoracic sympathetic ganglion (Fig. 1). His clinical record appears under Case 1 in the preceding article. His subsequent history, with particular reference to his sensory disturbances, is as follows:

During the eight days of his postoperative convalescence, he did not complain of, but had, on questioning, slight pain and discomfort in the region of the left temporomandibular joint. This occurred only when he opened his mouth widely, and he attributed it to an overstrain during the administration of the ether, or during the vomiting that followed the anesthetic. Dec. 17, 1923, he was again admitted to the hospital with a diagnosis of trigeminal neuralgia. The pain in the left mandibular joint had persisted. Two and a half months after operation, attacks of pain began behind the left ear, and in a short time became very severe, often radiating in a semicircular fashion to the supra-orbital region. These occurred at intervals of from three to seven days, usually lasted from three to four hours, and sometimes were preceded by a sensation of quivering in the skin. No particular exciting causes, such as heat or cold, provoked the pain, and no treatments seemed to give him relief.

Later still, the patient developed pain in the distribution of the second and third branches of the fifth nerve, and localized areas of pain in the arm and chest. Contrary to our advice, he had his upper teeth extracted, and this gave him complete relief from the supposed toothache. The pain in the distribution of the third branch, however, persisted and was often provoked by a draft of cold air; but cleansing the teeth, eating and shaving did not seem ever to induce an attack of pain. The pain in the distribution of these two branches was less in severity but more constant in character than was the sharp, lancinating pain in the first branch of the fifth and in the occipital nerves. In addition to pain, he complained of more or less complete anesthesia in the left side of the face, tongue, mouth and pharynx. Saliva occasionally drooled from the corner of the mouth. Swallowing the first few mouthfuls of water or food was sometimes a little difficult. He stated that his voice had changed from a baritone to a soprano. At times he was annoyed by a roaring noise in the left ear. Lacrimation and an occasional swelling of the upper eyelid sometimes bothered him.

Fig. 1. — Sympathetic chain, including the superior cervical and first thoracic ganglions.

The objective disturbances were ptosis of the left eyelid, contraction of the left pupil, slight enophthalmos, a large area of anesthesia of the left side of the face, neck and inside of the cheek, partial anesthesia of the left half of the tongue, pharynx and palate, slight deviation of the tongue to the left side, loss of sense of taste on the left side of the tongue, and extreme tenderness over the course of the left occipital nerves and all the branches of the fifth nerve. An additional finding, not hitherto observed by the patient, was a very definite diminution in sensation over the entire left half of the head, the left arm, and the left thoracic wall down almost to the costal margin (Figs. 2 and 3). Deep or muscle sense, though definitely changed, was everywhere present. Disturbances in secretion of the sweat and salivary glands, and disturbances in the peripheral circulation, though carefully watched for, were not observed. He, however, did complain of a dryness of the mouth. On swallowing food or water, there was often a little hesitation at the beginning of the act.

SENSORY DISTURBANCES

Two months later, in February, 1924, we examined more critically his sensory disturbances. The findings were as follows:

Touch.—Light touch was absent over the left half of the body above a line roughly joining the ensiform process with the twelfth dorsal spine. At the edge of this area there was no belt of curious or undiscriminated sense; one passed from the numb to the quick always at a definite place. Tested with a wisp of cotton, the limit for light touch overlapped the midline a little farther than when tested with a coarse tactile hair.

Over approximately the same area, with the finger of the examiner as the instrument, pressure touch showed everywhere a threshold higher than over normal skin.

Superficial Pain. — This was examined with a pin point. Although reduced over the same area in which light touch was absent, it remained to some degree appreciable. At the nape of the neck, the limits of the two sensibilities coincided. Elsewhere the overlapping of the midline was less wide for superficial pain. The lowest threshold was on the face.

* From the surgical department, Cincinnati General Hospital.

Pressure Pain.—Tests were made with the Cattell algometer. At the first examination the threshold was high over all the involved area, and at the last examination it was still higher.

Pressure-Pain Measurements (Algometer)

	Dec. 29, 1923		Feb. 3, 1924	
	Left, Kg.	Right, Kg.	Left, Kg.	Right, Kg.
Knuckle, first finger	6.5	3	8	4
Knuckle, second finger	4.5	4	11	6
Knuckle, third finger	5	4	9	5
Knuckle, fourth finger	6	2.5	9	7
Thenar eminence	7.5	3.5	9	7
Deltoid	7	4.5	8.5	7
Triceps	7	5	10	5
Acromion	5	5	8.5	5
Angle of scapula	3.5	3	9.5	5.5
Pectoralis	2	1.5	6.5	3.5
Masseter	1.5	2.5	4	2
Temporal	1.5	3.5	4	3.5
Frontalis	2	2.5	4.5	3.5
Occipital	2	3.5	5	4
Quadriceps	7.5	8	7	7.5
Hamstrings	7	7.25	10	9.5

Temperature.—Though feeling the touch of the test tube, the patient was unable to recognize heat and cold. The limits for temperature were coterminous with those for touch with the cotton wisp.

Roughness.—With the left hand, the patient was unable to discriminate between linen and plush, or between wool and velvet. Some sense of difference in thickness, however, remained. With the right hand, the appreciation of texture, roughness and thickness was normal.

Vibration.—Only over the mastoid could the vibrations of the one hundred per second tuning fork be perceived. Hence,

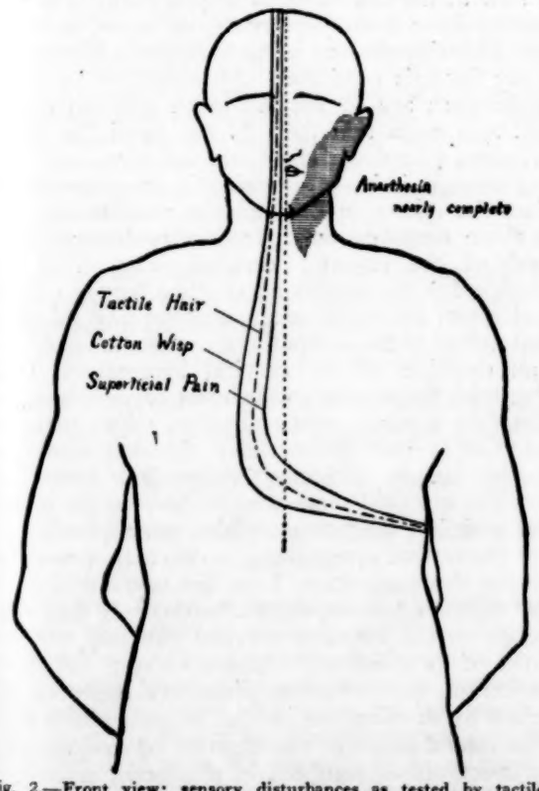

Fig. 2.—Front view: sensory disturbances as tested by tactile hair, cotton wisp and pin point, indicating the overlap of the midline.

any comparison of bilateral points was useless. Air conduction was better than bone conduction, both left and right. It is interesting that the patient, who plays the violin, should recently have noted an inability to keep his notes true, because, as it seemed to him, he was no longer taking up vibrations through chin and hand. Perhaps it was simply that his fingers, having lost their just appreciation of interval, no longer were able skilfully to estimate distance on the strings.

Localization.—The patient's hand was covered from his view; a point on its surface was pressed against with a blunt pencil; he was asked to indicate the point that corresponded on the hand of the observer. On the affected side, contrary to our expectation, his power of localization proved more accurate than on the unaffected. On the unaffected, the ring finger was once mistaken for the middle, and the middle for the little finger; while, on the affected, the greatest inaccuracy measured 2.5 cm.

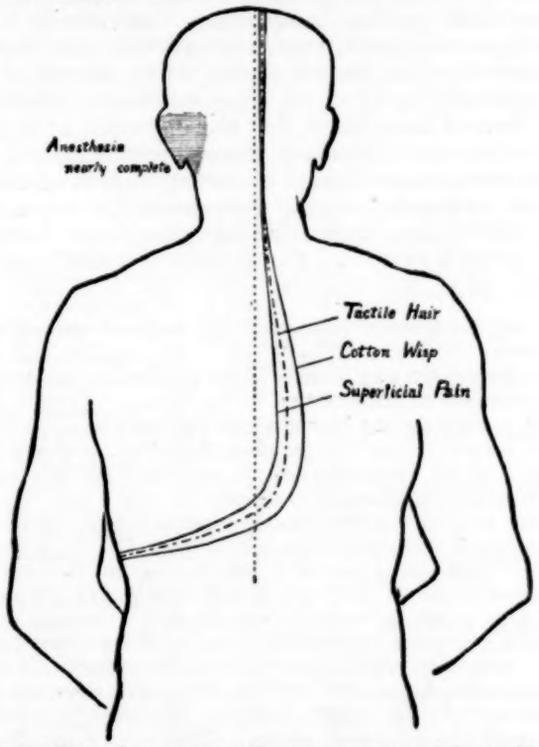

Fig. 3.—Back view: sensory disturbances as tested by tactile hair, cotton wisp and pin point, indicating the overlap of the midline.

Compass Test.—The acuity for two points was normal on the right. On the left, the patient could nowhere perceive as two even the widest separation of the usual laboratory instrument. This perceptual power had in part been only recently lost. Two months before, though unable on arm and chest to sense two points, he could still make them out when one was set over a distal, the other over a proximal phalanx.

Position.—If the patient's hand, with fingers spread, was placed against a piece of cardboard, the cardboard inclined to various angles, and if he was asked, his eyes shut, to indicate the position on the cardboard of a point just in advance of a certain finger, he would fall into gross mistake when so indicating with his left hand, and be remarkably unerring with his right. So far as this test is accurate, it may be said that on the left there was a considerable loss in the sense of position.

Passive Movement.—To distinguish even hyperextension from hyperflexion proved impossible on the left. A phalanx or a finger, or the whole hand, was for a few moments caused passively to assume a certain posture, and then the posture disturbed, the patient was asked voluntarily to reassume it. Changes of angle at the elbow were better recognized.

Appreciation of Weight.—There was a difference, but not an extreme difference, between the two sides. For weights above 150 gm., the patient with his right hand detected variations of 30 gm.; with his left, variations of 60 gm.

Shape in Two Dimensions.—We employed cardboard forms such as are used in kindergarten. His right hand distinguished correctly between them; his left would mistake an octagon for a circle, a triangle for an oval, a hexagon for a diamond.

Size.—There was normal accuracy on the right. On the left he could make out differences only greater than 3.5 cm. He was given for this purpose triangles, spheres and circles.

Form in Three Dimensions.—Again he showed himself normally discriminating with his right, but with his left he took a cone for a frustum, an ovoid for a cylinder, and a cylinder for a sphere.

It will be seen from the foregoing examinations that there were definite disturbances in the sensory functions of the fifth and the ninth cranial nerves, and the cervical and all the thoracic nerves on the left side. There were possibly some minor disturbances in the function of the third, tenth and twelfth cranial nerves; whereas the first, second, fourth, sixth, seventh, eighth and eleventh cranial nerves appeared to be unaffected.

It seemed most likely that the operation of cervical sympathectomy provoked this patient's cranial and spinal nerve disturbances. Assuming this to be true, it may be of interest to state the sympathetic connections with the various nerves that may have been disturbed during the operation. The superior cervical ganglion sends:

1. Gray rami communicantes to the first and second cervical nerves.
2. A communicating branch to the petrous ganglion of the glossopharyngeal nerve.
3. A communicating branch to the hypoglossal nerve.
4. A somatic branch to the pharynx, which, with branches of the vagus, glossopharyngeal and external pharyngeal nerves, forms the pharyngeal plexus.
5. An internal carotid branch forming: (*a*) the carotid plexus, which sends a communicating branch to the gasserian ganglion and the great deep petrosal nerve to form the sympathetic root of Meckel's ganglion, and (*b*) the cavernous plexus, which sends a communicating branch to the ophthalmic division of the fifth nerve. All the spinal nerves receive gray rami communicantes from the sympathetic chain of ganglions. Associated with the fifth nerve there are four ganglions: (1) The ciliary ganglion receives a sympathetic root from the cavernous plexus; (2) Meckel's ganglion, a sympathetic root from the great deep petrosal nerve; (3) the otic ganglion, a sympathetic root from the middle meningeal plexus from the superior cervical sympathetic ganglion, and (4) the submaxillary ganglion, a sympathetic root from the nerve plexus of the facial artery from the superior cervical sympathetic ganglion.

Nearly all this patient's cranial nerves (except the fourth and the sixth) that have an intimate association with the superior cervical ganglion seemed to have been disturbed. Examination of the third cranial nerve showed the usual paralysis of the involuntary muscles of the eyelid and pupil. In the distribution of the fifth nerve, there were severe pain and a wide area of anesthesia. Disturbances in function of the ninth, tenth and twelfth cranial nerves were evidenced by sensory changes in the tongue, palate and pharynx, a sensation of roaring in the ear, difficulty in swallowing, and a deviation of the tongue to the left. The other cranial nerves, namely, the first, second, seventh, eighth and eleventh, do not have very intimate, if any associations with the cervical sympathetic chain. The second cervical nerve, which gives rise to the small occipital nerve (the nerve that caused the most severe pain), receives a gray ramus communicans from the superior cervical sympathetic ganglion.

So little is known about the true function of the sympathetic nervous system that to attempt an explanation of the phenomena that resulted after the cervical sympathectomy in the foregoing cited case would be little more than conjecture. It has been suggested to us that the degeneration of the sympathetic nerves may have caused an irritation of the cranial nerves that are in intimate association with the superior cervical ganglion. Yet on this basis the extensive changes in the sensory function of the spinal nerves, most of which receive branches from ganglions that were not disturbed, are difficult to explain.

Although believing that the sensory nerve disturbances following this first sympathectomy for angina pectoris were in some way caused by the operation, the operator was inclined to regard them as of rare and unusual occurrence. Removal of the superior cervical ganglion, with or without a portion of the sympathetic chain, has been performed several hundred times. Jonnesco alone has performed the operation more than 200 times for epilepsy, glaucoma, exophthalmic goiter, etc Yet, sensory disturbances, such as are reported in this paper, have not, so far as we know, been recorded. In view of this, one of us (M. R. R.) did not hesitate to perform a similar radical operation for another case of severe angina pectoris.[1] Following the operation, the patient was entirely free from cardiac pain and distress. Just before his sudden death, two weeks after the operation, he had begun to have definite but slight sensory disturbances, such as subjective numbness and pain in the distribution of the fifth cranial and the lesser occipital nerves; but no demonstrable, extensive changes had occurred in the other cranial or spinal nerves.

Bacon [2] has reported mild sensory disturbances following a sympathectomy for angina pectoris; and two other surgeons of my acquaintance have had somewhat similar experiences.

In view of the few cases of angina pectoris in which operations have been performed, it would seem that sensory disturbances may occur frequently after sympathectomy for this condition. Although the patients in my experience are so pleased to be relieved of their anginal symptoms that they do not mind the sensory disturbances (the first patient was not conscious of any sensory changes in his arm or chest), one naturally asks whether the operation may not be modified so as to avoid these complications. It is very likely that the removal of the superior cervical ganglion is most responsible for the cranial nerve disturbances. As the cervical spinal nerves do not contribute any splanchnic efferent nerves to the sympathetic system, it would seem that an excision of the cervical sympathetic trunk, together with the middle and inferior cervical ganglions and the first thoracic, when possible, ought to suffice. Indeed, Coffey and Brown have obtained some good results by simply dividing the cervical sympathetic trunk. Yet it would seem wise to remove the inferior cervical and first thoracic ganglions when possible, for most of the cardiac sympathetic nerves arise from them. In making this suggestion, I am not unmindful of the possible reflexes (demonstrated by Bayliss) that might take place in the superior cervical ganglion after the severance of its splanchnic efferent nerves. To obviate this objection, the foregoing procedure might be supplemented by dividing the cardiac branch, which arises from the lateral aspect of the superior cervical ganglion.

The observations recorded in this paper may be of value to those interested in a study of the function of the sympathetic nervous system and, also, to those surgeons interested in the treatment of trifacial neuralgia. It has been the experience of almost every surgeon who has had a large experience that division of the sensory root has occasionally failed to relieve the symptoms thought to be due to this disease. In such cases, may not the sympathetic nervous system be more at fault

1. Case 2, reported in the preceding article.
2. Bacon, J. H.: Left Superior Cervical Sympathectomy Under Local Anesthesia in Angina Pectoris, J. A. M. A. **81**: 2112 (Dec. 22) 1923.

than the trigeminal nerve? In this connection, it is interesting to note that Suder has cured atypical cases of trifacial neuralgia by operating on Meckel's ganglion, and that Jonnesco reported the cure of a case of trifacial neuralgia by excising the superior cervical ganglion. Recently, Dr. G. J. Heuer had occasion to examine a patient who was operated on about eight years before for trifacial neuralgia, and who was not completely relieved by a division of the sensory root of the fifth nerve. He found that by pressure on the superior cervical ganglion, severe pain, very similar to his old attacks, was reproduced in all three branches of the fifth nerve, although the face was totally anesthetic. In such a case, one would seem justified in excising the superior cervical ganglion.

For the physiologist, the operation of sympathectomy, which gives such startling relief from angina, may throw much light on our knowledge of the function of the sympathetic nervous system, particularly the interrelation between its function and that of the so-called somatic nervous system.

SUMMARY

1. Following a left cervical sympathectomy for angina pectoris, the patient developed pain that simulated trifacial neuralgia.

2. There occurred marked sensory changes in the entire left half of the body, from the head to the costal margin. When Head's tests were applied to this region of the body, the following results were obtained:

(*a*) Epicritic sensibility was absent; (*b*) superficial pain remained, but was much reduced; (*c*) the threshold for pressure pain was markedly lowered; (*d*) within critical limits, the power to perceive increments of heat and cold was absent; (*e*) discrimination for roughness and texture was gone; (*f*) vibration was perceived only over the mastoid bone; (*g*) recognition of two points was absent; (*h*) protopathic sensibility was diminished; (*i*) sense of position, weight and passive movement was disturbed; (*j*) correct appreciation of shape and size was lacking in both two and three dimensions.

3. A careful study of sympathectomized human beings may add much to our knowledge of the function of the sympathetic nervous system.

THE EXCRETION OF PHOSPHORIC ACID DURING ANESTHESIA *

WESLEY BOURNE, M.D.
AND
RAYMOND L. STEHLE, PH.D.
MONTREAL

According to an explanation of the nature of the acidosis of anesthesia recently suggested by us,[1] the acidosis is due to the discharge of phosphoric acid from the muscles, which then neutralizes a portion of the blood alkali. Owing to the anuria or oliguria that often occurs in anesthesia, this phosphoric acid may not be excreted at once, but appears to be retained in the liver until after the anesthesia, when it is excreted or redistributed. In those instances in which anuria or oliguria does not develop, the augmented excretion of phosphorus may occur during the period of anesthesia.

The results contained in an earlier paper [2] demonstrating an increase of sodium and potassium excretion during and subsequent to anesthesia are in harmony with the theory proposed.

In all the experiments previously reported, animals were used. The present communication concerns the phosphorus and chlorid excretion in human beings, as influenced by ether, morphin and ether, chloroform, and nitrous oxid anesthesia, in a series of cases in the Western Hospital, Montreal, in the service of Dr. J. A. Springle and Dr. C. C. Gurd. We have not thought it necessary to determine the excretion of bases, because we believe that the facts concerning them are already sufficiently proved.

Results of Experiments in Fifteen Cases

Expt. No.	Period	Length of Period, Minutes	Phosphorus per Minute, Mg.	Chlorid per Minute, Mg.	Operation; Method of Phosphorus Determinations; Comment
1	Control.....	120	0.098	2.08	Anterior and posterior colporrhaphy; uranium
	Ether.....	130	0.341	3.28	
	Postanesthetic	120	0.991	3.38	
2	Control.....	120	0.256	3.81	Oophorectomy (tumor); uranium
	Ether.....	95	0.724	4.80	
	Postanesthetic	120	1.21	2.29	
3	Control.....	120	0.226	3.34	Inguinal herniotomy; Pregl method
	Ether.....	35	0.413	2.16	
	Postanesthetic	135			
4	Control.....	120	0.310	2.94	Inguinal herniotomy; Pregl
	Ether.....	60	0.592	1.92	
	Postanesthetic	150			
5	Control.....	120	Lost	Lost	Appendectomy and colopexy; Pregl
	Morphin.....	75	0.500	17.30	
	Ether.....	150	0.272	2.95	
	Postanesthetic	120	1.23	3.11	
6	Control.....	120	0.049	3.44	Appendectomy and colopexy; Pregl
	Morphin.....	110	0.131	4.28	
	Ether.....	80	0.239	2.47	
	Postanesthetic	120	1.44	2.70	
7	Control.....	120	0.295	3.47	Removal of hemorrhoids; Pregl
	Morphin.....	100	0.353	7.80	
	Ether.....	60	0.358	6.00	
	Postanesthetic	120	2.21	2.39	
8	Control.....	120	0.171	3.04	Appendectomy and bilateral salpingo-oophorectomy; Pregl
	Chloroform...	105	0.065	2.23	
	Postanesthetic	120	0.816	3.13	
9	Control.....	120	0.436	—	Appendectomy and colopexy; Pregl; marked anuria during part of postanesthetic period
	Chloroform...	120	0.185	—	
	Postanesthetic	390	1.92	—	
10	Control.....	120	0.382	4.95	Bilateral inguinal herniotomy; uranium
	Chloroform...	110	0.427	5.45	
	Postanesthetic	120	0.801	4.22	
11	Control.....	120	0.430	4.17	Inguinal herniotomy; uranium; anuria of unknown duration
	Chloroform...	65	Lost	—	
	Postanesthetic	120	0.195	0.96	
12	Control.....	115	0.439	5.61	Inguinal herniotomy; uranium
	Chloroform...	75	0.280	5.24	
	Postanesthetic	120	0.443	3.95	
13	Control.....	120	0.134	6.48	Appendectomy and colopexy; Pregl
	Nitrous oxid with a little ether.....	100	0.120	6.96	
	Postanesthetic	120	0.163	4.99	
14	Control.....	150	0.078	5.23	Anterior and posterior colporrhaphy; Pregl
	Nitrous oxid...	73	0.181	9.64	
	Postanesthetic	120	0.509	5.73	
15	Control.....	110	0.642	2.55	Appendectomy and colopexy; uranium
	Nitrous oxid...	65	0.136	5.32	
	Postanesthetic	120	1.11	2.28	

METHOD USED

The urine of the various periods was always obtained by catheterization and thorough rinsing of the bladder. The catheterization was performed as soon before and after the operation as possible, but there was some inevitable overlapping in both directions of the period designated as the period of anesthesia. This in no way obscures the results. Phosphoric acid was determined in some cases by titration with a standard uranium solution, while in others the total phosphorus was determined by the method described by Pregl.[3] Chlorids were determined by the Volhard-Arnold method.

Of the fifteen cases here reported, eleven show a definite increased phosphorus excretion as a conse-

* From the laboratory of pharmacology, McGill University Faculty of Medicine.

1. Stehle, R. L., and Bourne, Wesley: J. Biol. Chem. **60**: 17 (May) 1924.

2. Stehle, R. L.; Bourne, Wesley; and Barbour, H. G.: J. Biol. Chem. **53**: 341 (Aug.) 1922.

3. Pregl, Fritz: Die quantitative organische Mikroanalyse, Berlin, 1923, p. 151.

quence of the anesthesia. The period of high phosphorus excretion does not always occur at the same relative time, but for the most part it is already evident in the course of anesthesia. In the case of chloroform, the most pronounced increases occur in the postanesthetic periods, and this is true also in those cases in which ether was preceded by morphin. Possibly, the greater excretion of phosphorus following the anesthetic is due to a period of oliguria accompanying the anesthetic.

The chlorid excretion does not show any significant variations in these experiments. The figures are reported here chiefly because they may be taken as a criterion of the completeness of catheterization; and, since the variations in chlorid and phosphorus rates in a number of instances are of an opposite nature, the effect of the anesthetic agent on the phosphorus excretion is brought out more strongly.

It is interesting that the same effect on the excretion of phosphoric acid is shown by nitrous oxid as by ether and chloroform, which indicates that these agents exert the same general action on the discharge of phosphoric acid from the muscles, either by affecting the permeability of the cell membranes or otherwise.

CONCLUSION

Data obtained on human subjects are in harmony with the view that the acid responsible for the acidosis of anesthesia is phosphoric acid.

THE EFFECT OF THYROID ADMINISTRATION ON THE EYE OF THE FROG TADPOLE

A POSSIBLE ADDITIONAL FACTOR IN THE PRODUCTION OF GOITROUS EXOPHTHALMOS *

C. C. SPEIDEL, Ph.D.
CHARLOTTESVILLE, VA.

It is well known that the feeding of thyroid extract to frog larvae accelerates the process of metamorphosis. One aspect of this change, which may readily be noted a few days after the first thyroid administration, is a definite protrusion of the eyeballs. Huxley and Hogben [1] have pointed out that this is apparently comparable to the exophthalmic condition in man associated with exophthalmic goiter. The object of the present study is to determine as nearly as possible the mechanism by which the change in the eye of the thyroid-treated tadpole is accomplished.

Tadpoles (*Rana catesbeiana*) of about 6 cm. in length constitute the material used. Microscopic examinations of eyes from normal tadpoles, and of eyes from animals killed at intervals varying from one to thirty-three days after the first thyroid feeding, supply the data on which the conclusions are based.[2] These observations are supplemented by gross anatomic dissections of the orbital region.

In a normal untreated tadpole at the stage of development used, the eyes are small and protrude only slighlty from the surface. Examination of sections shows that the cells of all regions of the eyeball are in the resting stage.

In the thyroid-treated animals, changes quickly become apparent, both in the size and shape of the eyeballs and in the character of the adjacent tissues. There is some absolute increase in the size of the eyeball itself. This increase is not generally distributed, however, but is localized rather definitely in the anterior region. It leads to a definite protrusion of the whole anterior segment. This process, coupled with the general shrinkage of the adjacent tissues of the face, results in a marked exophthalmic condition.

Microscopic sections reveal, furthermore, that the growth process in the anterior portion of the eyeball takes place for the most part in the basal layer of retinal cells in the ora serrata region. In an animal killed six days after the first thyroid administration, these cells show great mitotic activity (Fig. 1). Almost 50 per cent. of the cells in the basal retinal layer of the section in Figure 1 are in process of division. Such frequency of mitotic figures, even in tissues known to be growing rapidly, is rare. This activity is in striking contrast to the condition found in the normal untreated tadpole (Fig. 2). No mitoses are here observable. In later stages of thyroid-accelerated metamorphosis, the division rate of these cells becomes somewhat less. At the end of thirty-three days, however, a few mitoses may still be seen in any section passing through the ora serrata. Examples of cell division in other parts of the eyeball are scarce, with the exception of the conjunctival region and, to a less extent, of some of the mesenchymal tissue around the eyeball.

It is plain that the thyroid administration has set in motion a chain of reactions, one result of which is a selective proliferative process in the anterior portion of the eyeball. Keeping in mind the anatomic location of the ora serrata, it will be seen at once that growth here means a pushing outward of the anterior portion of the eye. This activity, then, appears to be the chief immediate part of the mechanism by whch protrusion of the eyeball is accomplished.

The question arises as to why the ora serrata region should be affected, and other adjacent regions left comparatively unaffected. It seems to be characteristic of the thyroid autacoid that it exerts its chief progressive effects by acting on the undifferentiated or embryonic cells. Thus, in epithelial surfaces, the basal layer is the part stimulated to mitotic activity, and in the deeper tissues it is the mesenchymal cells (fibroblasts, myoblasts, etc.). This has been noted in many different regions in tadpoles undergoing thyroid-accelerated metamorphosis. I am of the opinion that the marked increase in metabolic rate following thyroid administration is very largely to be ascribed to the increase in metabolic activity of relatively undifferentiated cells. It is, therefore, quite in accord with this general condition that in the eyeball it should be the undifferentiated ora serrata that is affected, and of the layers of retinal cells in the ora serrata, the most undifferentiated, i. e., the basal layer.

The possible application of these observations to the condition of exophthalmos in human exophthalmic goiter is evident. That exophthalmic goiter is intimately related to thyroid function is beyond question. It is further true that much of the data from exophthalmic cases suggests a condition of hyperthyroidism. Among these data may be cited the increase in basal metabolic rate, the deleterious effects of thyroid feeding, and the beneficial effects of thyroid gland removal, the appearance of the gland as suggestive of a hyperfunction, and

* From the laboratory of histology and embryology, University of Virginia Department of Medicine.

1. Huxley, J., and Hogben, L.: Experiments on Amphibian Metamorphosis and Pigment Responses in Relation to Internal Secretion, Proc. Roy. Soc. **93**: 36-53, 1922.

2. Some of the material was prepared by Mr. A. B. Dickey.

the excess of thyroid secretion in the blood, as revealed by the acetonitril method of Hunt. That there are valid objections to explaining all the symptoms of exophthalmic goiter as being caused by hyperthyroidism is also true. In the main, however, the evidence favors the view that the exophthalmos of exophthalmic goiter is associated with hyperthyroidism.

There are several conceptions regarding the immediate mechanism by which the protrusion of the eyeball is accomplished.[3] An increase in the amount of fat in the orbit has often been noted at the necropsy of exophthalmic goiter patients. This, however, is now generally regarded not as a primary cause of the protrusion of the eyeball, but as an adaptation of the orbit in response to and following the exophthalmos. In the second place, it is held that vascular changes within the orbit may account for certain variations in eyeball protrusion. To a limited extent, this may be true. Definite vascular changes occur in the eyes of thyroid-treated tadpoles. However, the explanation that is most generally accepted is that the eyeball is pushed forward by a spasm of the smooth muscle fibers constituting the müllerian muscle. These fibers extend about the eyeball and are attached to the lids and the anterior orbital fascia. Their contraction tends to draw back the lids and to protrude the eyeball. Since this smooth muscle is innervated by the cervical sympathetic nerve, it is assumed that the more remote cause of exophthalmos is a disturbance in the sympathetic system. This assumption has some support from the fact that extirpation of the superior cervical ganglion from patients with exophthalmic goiter has frequently been followed by a noteworthy reduction of the exophthalmos.

This last explanation of the manner in which protrusion of the eyeball is induced in human exophthalmic goiter is probably correct. It is not necessarily, however, the entire explanation. The striking selective effect of experimental hyperthyroidism in tadpoles on

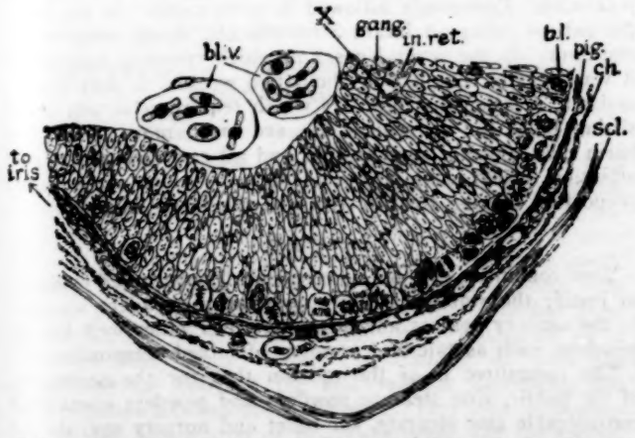

Fig. 1.—Ora serrata region of eye of thyroid-treated tadpole, six days after the first thyroid feeding; rapid mitotic proliferation of cells in the basal retinal layer may be seen; this condition is in striking contrast to the condition in the normal untreated tadpole: *b. l.*, basal layer of retinal cells in the region of the ora serrata; *bl. v.*, blood vessels; *ch.*, choroid layer; *gang.*, ganglionic layer of retina; *in. ret.*, inner reticular layer of retina; *pig.*, pigmented layer; *scl.*, sclera; *X*, ora serrata end of inner reticular layer of retina.

the basal layer of relatively undifferentiated cells in the ora serrata region, which leads quickly to protrusion of the anterior portion of the eyeball, suggests the possibility that a similar process may occur in cases of exophthalmic goiter. In other words, intrinsic as well as extrinsic factors may be operating on the eyeball. The protrusion may be partly caused by actual growth and multiplication of cells in the anterior portion of the eyeball itself. Microscopic examination of the ora serrata region in human eyes in the earlier stages of exophthalmos is necessary to settle this point. This conception, of course, does not preclude the simultaneous operation of the other factors mentioned above, such as spasm of smooth muscle fibers.

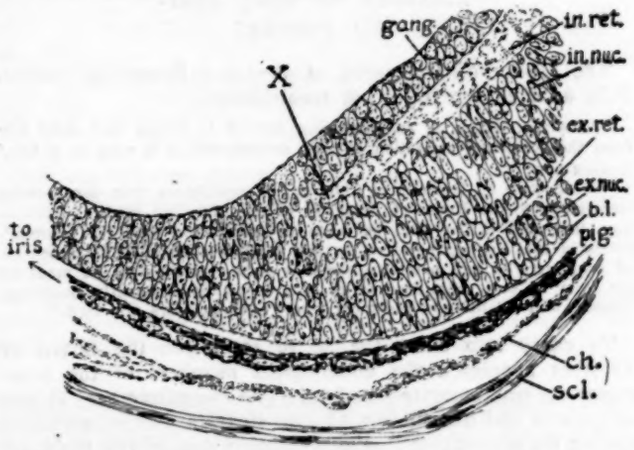

Fig. 2.—Ora serrata region of eye of normal untreated tadpole for comparison with Figure 1: all cells in the resting stage, including the basal layer of retinal cells; *b. l.*, basal layer of retinal cells; *ch.*, choroid layer; *ex. nuc.*, external nuclear layer; *ex. ret.*, external reticular layer; *gang.*, ganglionic layer; *in. nuc.*, inner nuclear layer; *in. ret.*, inner reticular layer; *pig.*, pigmented layer; *scl.*, sclera; *X*, ora serrata end of inner reticular layer of retina.

SUMMARY

Experimentally induced hyperthyroidism in frog larvae is accompanied by a marked protrusion of the eyeball. The immediate cause of the protrusion is a rapid growth of the anterior portion of the eyeball, evidenced especially by great mitotic activity on the part of the cells of the basal retinal layer in the region of the ora serrata. The possibility is suggested that a similar selective action of the thyroid secretion may occur in the exophthalmos of human exophthalmic goiter; and that the protrusion of the eyeball may be explained in part as the result of actual growth in size of the anterior portion of the eye, localized especially in the relatively undifferentiated region of the ora serrata.

The Kata-Thermometer.—Leonard Hill has designed an instrument to measure comparatively and approximately the rate of heat loss of the body under varying conditions. This instrument is the Kata-Thermometer: it is a large bulbed spirit thermometer with a safety bulb at the top. In use the bulb is dipped into hot water until the alcohol rises into the safety bulb, and then the instrument is dried and suspended in the air to be tested: the time taken to fall from 100 to 95 F. (2.5 degrees above and below normal body temperature) is measured with a stop watch. The instrument is then used wet, i. e., with a silk mesh finger stall placed over the bulb, the excess water shaken off and the readings taken. Several readings (three or four) should be registered with each and the average worked out. The dry bulb gives the cooling power by radiation and convection, the wet by radiation, convection and evaporation: to find this each instrument possesses a factor (which has been evolved under specific conditions) and into this factor is divided the number of seconds which has been found by the experiment in question. This gives the cooling power in milli-calories per square centimeter per second.—Simpson, J. V. A.: Report on the Ventilation of Schools, *Journal of Hygiene* **22**:164 (Dec.) 1923.

3. Only the exophthalmos of exophthalmic goiter is here considered. It is, of course, recognized that an exophthalmic condition may result from tumors, aneurysm, orbital edema and injury, which would be in no way associated with hyperthyroidism.

Special Article

DANGERS OF ZINC STEARATE DUSTING POWDERS

REPORT TO THE HOUSE OF DELEGATES BY COMMITTEE APPOINTED BY THE BOARD OF TRUSTEES ON ACCIDENTS FROM STEARATE OF ZINC DUSTING POWDERS

The House of Delegates, at the San Francisco session, 1923, adopted the following resolution:

"WHEREAS, There is an increasing hazard to infant and child life from the accidental aspiration of zinc stearate which is used as a baby dusting powder,

"The Section on Diseases of Children, by unanimous vote, does hereby recommend to the House of Delegates of the American Medical Association, that such action shall be taken in cooperation with the manufacturers of said dusting powders, so that caution labels shall be placed on all containers of said powders, and that such changes shall be made in the form of said containers so as to prevent the frequently occurring illnesses and fatalities in instances where such powders are used."

To carry into effect the above resolution the Board of Trustees appointed the undersigned members of the committee on zinc stearate powders. The committee sent letters to packers and distributors of zinc stearate dusting powders, calling their attention to the resolution and asking their aid in accomplishing the end sought by it. The Council on Pharmacy and Chemistry was appealed to for advice as to the therapeutic value and status of zinc stearate as a dusting powder. And through a notice published in THE JOURNAL the medical profession was requested to report to the committee such accidents from the use of zinc stearate dusting powders as had come or might come to its notice.

ATTITUDE OF MANUFACTURERS AND PACKERS

From manufacturers and packers of zinc stearate dusting powders nine replies were received. There was a general agreement among them that zinc stearate dusting powders had advantages not possessed by others and that the sale of such powders was of considerable commercial importance. Two of the manufacturers who replied had realized the dangers of zinc stearate dusting powders; one had adopted a self-closing can, and the other was using caution labels and was at work on a self-closing can, which it has since put into use. One foreign packer of a zinc stearate powder was using a self-closing container, but apparently for the purpose of conserving the fragrance of his powder and not for the purpose of protecting infants from any danger inherent in it, for its fragrance and the price make it hardly available for general nursery use. Objection was raised by some manufacturers to the use of caution labels on the ground that they might hinder sales. In the case in which caution labels had been adopted, however, they were so worded as to make the warning apply not to zinc stearate powders alone, but to dusting powders generally. This guarded against discrimination against zinc stearate powders by the purchasing public. One manufacturer suggested the advisability of vending all zinc stearate powders in metal containers because of the possibility of pasteboard containers being softened by accidental immersion in water, the infant being thereby enabled to bite its way through; but no case was reported in which the accident had happened in that way. Another manufacturer has discontinued the use of zinc stearate in its baby powders, to obviate any possibility of danger. Most manufacturers and distributors expressed a desire to cooperate in any effort that might be made in safeguarding infants and others from injury.

VIEWS OF THE COUNCIL ON PHARMACY AND CHEMISTRY

In reply to a question propounded by the committee, the Council on Pharmacy and Chemistry replied that it is very questionable whether zinc stearate has any important advantage for use with infants over the other dusting powders. The Council was asked further, in event it should find that zinc stearate dusting powder had advantages over zinc oxide and other substances, whether such advantages were sufficient to justify the use of zinc stearate powders, notwithstanding their danger to infant life. To this question the Council replied that in its judgment it did not seem advisable to stop the sale of zinc stearate, providing it can be marketed in such a form that it will not be a menace.

REPORTS OF ACCIDENTS

Twelve cases of the accidental inspiration of zinc stearate dusting powders were reported by Heiman in 1922. One patient died within twenty-four hours. Three developed signs of bronchial pneumonia, with symptoms of acute toxemia, lasting from two to three weeks, but ultimately recovered. In the remaining eight cases, partial asphyxia was followed by gradual recovery without definite involvement of the lungs.[1]

In response to a request for reports of accidents from stearate of zinc dusting powders, published in THE JOURNAL, Feb. 9, 1924, thirty-four cases have been reported, five of which terminated fatally. Eleven reports did not state the date of the accident. Of the remaining cases, eleven have occurred since January 1 of the current year, and all have occurred since April 9, 1919. The youngest patient was 3 months old, and the oldest 2 years. In seven of the cases, somewhat more than one quarter of the total number in which the age was stated, the victims were 6 months old. The youngest victim was a 3 months old baby, to whom a can of the dusting powder had been given as a plaything, and who died in one hour. Accidents most commonly resulted from the sifting out of powder from the can in the hands of the infant, with consequent inhalation, but in some cases the infant is reported as having put the container to his mouth. In one case the lid came off accidentally. In another, an older child threw some of the dusting powder into the infant's face.

The symptoms were in all cases immediate, the severity depending on the amount inhaled and the amount lodged in the mouth and nostrils. In typical cases there were asphyxia and evidence of collapse. The persistent collapse seemed strongly suggestive of a toxic effect, possibly a zinc (Zn^{++}) poisoning. Pneumonia followed in some cases. In one case, the patient being an infant 3 months old, death occurred in one hour. In the several cases in which recovery took place it was usually complete in about two weeks. It may not be amiss to mention that powders which require relatively large sifting holes for convenient use are much more potent for harm than those of smaller size, and all cans brought to our attention which contained zinc stearate alone or a large proportion of zinc stearate required the large holes.

CONCLUSIONS

Your committee can find no scientifically controlled evidence to justify the statement that zinc stearate powders as used in the nursery possess any advantage over other well known powders, such as talc and powders of mixed composition.

The committee is of the opinion that for the protection of the public, zinc stearate powders and powders containing considerable zinc stearate, for toilet and nursery use, should be sold only in containers with permanently attached covers. The shape of the cover should be such as to render it impracticable for an infant to place the top in his mouth. The cover should be kept automatically and positively closed whenever the container is not in use; for instance, by a slide or valve closing the holes at all times, except when operated by firm pressure by the hand of the person using it, the slide or valve being held in position by a spring so strong that an infant cannot operate it. Conspicuous, clearly worded caution labels should be placed on all containers of stearate of zinc dusting powders for toilet or nursery use, warning users to keep such containers out of reach of infants and children.

1. The Aspiration of Stearate of Zinc in Infancy. Henry Heiman and Paul W. Eschner, American Journal of Diseases of Children, 23: 503-510 (June, 1922).

RECOMMENDATIONS

Your committee recommends that the Board of Trustees be authorized to continue the work begun by it to induce manufacturers and packers of stearate of zinc dusting powders to market them in safe, properly labeled containers, as described above, or in some equally well safeguarded container, and to educate the public with respect to the danger inherent in such powders; and that the board be authorized further, if in its judgment it becomes necessary, to seek federal and state legislation to insure the marketing of such powders in the manner described.

ISAAC A. ABT, M.D.,
of the Section on Diseases of Children,
Chairman.

WILLIAM C. WOODWARD, M.D.,
Bureau of Legal Medicine and Legislation.

PAUL N. LEECH, PH.D.,
American Medical Association Chemical Laboratory.

Clinical Notes, Suggestions, and New Instruments

ABSENCE OF LEFT PECTORALIS MAJOR AND MINOR MUSCLES

J. M. HEYDE, M.D., LOUDONVILLE, OHIO

D. F., a youth, aged 19, is husky and muscular except for the absence of the left pectoralis major and minor muscles. In their location the ribs are plainly evident on inspection up to the clavicle. The infraclavicular region is a well marked fossa covered with loose skin. The right pectoral region is very rotund and muscular. The left mammary region seems atrophied and much smaller than the right. There is a history of suppurative infection of the left mammary gland a few days after birth. This was diagnosed "witches' milk" (whatever that is) by the attending physicians at the time of birth, and the chest deformity was attributed to it. There are no scars and no history of the breast being opened.

A MODIFICATION OF ALBERT'S STAIN FOR THE DIPHTHERIA BACILLUS *

R. L. LAYBOURN, M.S., IOWA CITY

Albert[1] described a new stain for diphtheria bacilli in 1920 and 1921 which has been used extensively in these laboratories. The advantages claimed for this stain are that the metachromatic granules are stained black and display a marked contrast to the body of the organism and other organisms present, facilitating the detection of the diphtheria bacillus when only a few are present in the smear. While this stain has been found useful, its efficiency might be greatly increased by a modification that would deepen the staining of both the granules and the body of the cell, without destroying the marked contrast between these elements. This may be accomplished by the substitution of malachite green for the methyl green of Albert's formula. This modification has been used in these laboratories on about twenty thousand cultures, with highly gratifying results.

The formulas for the modified stain are:

SOLUTION 1

Toluidin blue	0.15	gm.
Malachite green	0.20	gm.
Glacial acetic acid	1	c.c.
Ninety-five per cent. alcohol	2	c.c.
Distilled water	100	c.c.

The solution should stand for twenty-four hours, and is then ready for use after filtering.

SOLUTION 2

Iodin	2	gm.
Potassium iodid	3	gm.
Distilled water	300	c.c.

STAINING TECHNIC

1. Smears are made and fixed by heat in the usual manner.
2. Solution 1 is applied for from three to five minutes.
3. The slide is washed with water.
4. Solution 2 is applied for one minute.
5. The slide is washed with water.
6. It is blotted dry with filter paper.

* From the laboratories for the state board of health.

1. Albert, Henry: A New Stain for diphtheria Bacilli, J. A. M. A. 74: 28 (Jan. 3) 1920; Modification of Stain for Diphtheria Bacilli, ibid. 76: 240 (Jan. 22) 1921.

A SIMPLE METHOD FOR SHARPENING HYPODERMIC NEEDLES

RUPERT M. PARKER, M.D., CHICAGO

Any one who has attempted to repoint a hypodermic needle knows the difficulties encountered. The illustration shows a simple and effective device for sharpening them.

The length of the bevel can be varied by thrusting the needle through the cork at different angles.

A similar method may be used to sharpen scissors. A gash should be made across the flat surface of the cork, and the incision should be slanted into the cork, and made deep enough so that a blade of the scissors, when pressed into the slit, will find its level parallel with but not quite to the surface of the cork. When drawn across the stone, the edge should touch the grinding surface sufficiently to be sharpened.

Method of using cork when sharpening needle on stone.

7 West Madison Street.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

COD LIVER OIL.—Oleum Morrhuae.—For description see the U. S. Pharmacopeia and Useful Drugs.

Mead's Cod Liver Oil.—It has a vitamin potency so that one-fourth of one per cent. cures experimental rickets in rats in five days when added to the diet.

Manufactured by Mead Johnson and Co., Evansville, Ind. No U. S. patent or trademark.

Mead's cod liver oil complies with the U. S. P. standards for cod liver oil. In addition it is required to have a vitamin potency so that one-fourth of one per cent. when added to the diet of rats suffering from experimental rickets will cause complete healing of the lesion in five days as determined by the method of McCollum, Simmond, Shipley and Park (Proc. Soc. Exp. Biology and Medicine, Vol. XIX, No. 3, p. 123, 1921).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - - Five dollars per annum in advance

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SATURDAY, JULY 12, 1924

EFFECTS OF MYOCARDIAL INSUFFICIENCY

The progress of medicine affords numerous illustrations of the helpful influence that new methods of investigation bring to bear on it. Of late, so much acclaim has been given to roentgenographic procedures and to chemical technic in the examination of pathologic conditions in man that some of the other useful devices, notably those of a physical or physiologic sort applicable in the clinic, have been crowded into the background of immediate interest. Perhaps this helps to explain the assertion of Hooker [1] that, although studies of capillary contractility extend back for a period of fifty years, almost to the time of the discovery of vasomotor nerves, and although the profound significance of the blood stream in the capillary areas for tissue nutrition was recognized at an even earlier period, capillary function is given scant, if any, consideration in discussion of vascular reactions today. Not until the present decade has attention been seriously centered on the influences that varying capillary functions may contribute to the genesis of abnormal conditions in the circulation.

A recent application of such considerations has been made by Boas and Dooneief [2] of the Montefiore Hospital, New York, to the problem of the peripheral stasis of the blood and the consequent edema so often seen attending heart disease. The relation of the engorgement of the systemic veins to the edema is by no means simple. Some persons with marked cyanosis or with marked swelling of the liver, for example, show little or no edema, whereas others with edema show little other evidence of stasis. There has been a growing belief that with the failing heart action there is a rise in pressure in the right auricle, which impedes the venous flow to the heart; and that this, in turn, causes engorgement of the veins and a heightened venous pressure, which eventually is transmitted to the capillaries. Boas and Dooneief have observed, however, that in some patients with myocardial insufficiency the readings of capillary blood pressure are low. A venous pressure ranging as high as 39 cm. of water may be accompanied by a low capillary pressure, and a low venous pressure may be associated with a high capillary pressure. This attests the functional independence of the capillaries. It also brings into prominence anew the older idea, long since championed by Sir James Mackenzie,[3] that peripheral stasis is not always conditioned by back pressure effects, being dependent, rather, on a lessened propelling force of the left ventricle.

This diminished motive power of the heart results, according to Boas and Dooneief, in a slowing of the blood stream, particularly in the peripheral vessels. A greater oxygen unsaturation of the capillary blood ensues, which is followed by a dilatation of the capillaries. Whether, they add, the dilatation is determined by the want of oxygen, by the absence of some hormone, as suggested by some of the work of Krogh, or by impaired nutrition of the capillary wall resulting from an inadequate blood flow, is unknown. Undoubtedly, the dilated capillary walls are more permeable and, at a certain stage of the process, filtration edema will occur. In any event, the measurement of capillary pressure by newer methods of investigation, in cases of myocardial insufficiency, has again called into question the back pressure theory of heart failure, and has reemphasized the significance of inefficiency of the driving power of the cardiac muscle.

1. Hooker, D. R.: Evidence of Functional Activity on the Part of the Capillaries and Venules, Physiol. Rev. **1**: 112 (Jan.) 1921.
2. Boas, E. P., and Dooneief, George: The Mechanism of Peripheral Stasis in Myocardial Insufficiency, Arch. Int. Med. **33**: 407 (April) 1924.
3. Mackenzie, James: Diseases of the Heart, Ed. 3, London, 1913, p. 26.

RÔLE OF THE GLOMERULI IN RENAL FUNCTION TESTS WITH DYES

One of the tribulations of the student of medicine during his progress toward the goal of the doctorate lies in the necessity of considering the various theories, often seemingly contradictory or at least conflicting, that different teachers present in explanation of some of the fundamental phenomena with which he must deal. This debate of preferences has long been characteristic of discussions of kidney function. The unique structural and circulatory mechanisms in the renal tissues have stimulated interest and occasioned experiments that sometimes seem to lead to irreconcilable conclusions. Hence, one hears of the "filtration hypothesis," the "secretory theory," the problem of reabsorption, the relative participation of glomerulus and tubule in the elaboration of urine, the preponderance of pressure changes over velocity or volume of blood flow in the renal vessels or vice versa.

The true significance of the problem has been expressed well by Richards.[4] The question, he remarks, whether the glomerulus filters fluid or secretes fluid is more than academic. A well based conviction that the understandable process of filtration is the chief factor of glomerular activity permits clearly defined views concerning the nature of alterations in glomerular

4. Richards, A. N.: Kidney Function, the Harvey Lectures **16**: 163, 1920-1921.

function that occur in health and disease. It carries with it as an inevitable corollary a conviction of reabsorption of both water and dissolved substances from the lumen of the tubule; for no other process could account for the difference in composition between a blood filtrate and the urine as it leaves the kidney. Absence of such conviction on the other hand, he adds, necessitates refuge in the conception of "secretion," a word implying ignorance or uncertainty of processes involved and ill defined point of attack on the further questions of alterations in renal function.

By the beautiful method that Richards has devised for direct observation of the circulation and excretion in the kidney of the frog, Bieter and Hirschfelder [5] of the University of Minnesota have observed that phenolsulphonephthalein, the dye now so widely used in tests of renal function in man, is actually excreted through the glomeruli and can be seen in the capsular fluid. It does not appear in the glomeruli or the tubules when the circulation through the glomeruli has been cut off, though the tubular blood supply is intact, and hence, it is not excreted by the tubules. So far as can be concluded from studies on the frog's kidney, the phenolsulphonephthalein test of renal function is a test of pure glomerular function and not of tubular function. The dye is markedly concentrated within the lumina of the tubules. The Minneapolis pharmacologists believe that their experiments furnish the first absolutely objective proof that has as yet been advanced for the theory that the urine is excreted in dilute form in the glomeruli and concentrated in the tubules by the reabsorption of water, which occurs at least in the descending loops of Henle. It must be frankly admitted that the amphibian kidney has a blood supply quite unlike that of man. Nevertheless, there is no reason to doubt the application of the new studies to human renal conditions, and thus center attention on the glomerular structures so far as functional tests employing dyes are applied in clinical diagnosis.

5. Bieter, R. N., and Hirschfelder, A. D.: The Excretion of Dyes and Other Substances in the Frog's Kidney and Its Bearing upon the Theories of Renal Secretion, Am. J. Physiol. 68: 326 (April) 1924.

THE CONQUEST OF YELLOW FEVER

If persons who are engaged in the promotion of preventive medicine ever waver in their faith that progress will attend the effort, their courage and persistence should be further sustained by the recent records of the continued campaigns against yellow fever. The success of Gorgas in eradicating this disease by mosquito control in Havana, in Cuba and in the Panama Canal Zone, has been widely proclaimed as an outstanding, monumental achievement of modern hygiene and sanitation. Less known, though similarly gratifying, are the experiences of the late Oswaldo Cruz, the resourceful Brazilian who applied the methods of attack on the *Stegomyia* mosquito, so that Rio de Janeiro has long since been made "as safe as it is beautiful." In a recent tribute to him, President Vincent [1] of the Rockefeller Foundation has described how the undaunted leader, whose untimely death occurred in 1917, was appointed director of public health and loyally supported by President Alves, and gradually overcame traditional prejudices, professional opposition, the persistence of antiquated methods and apprehensive interests of many kinds, until the annual deaths from yellow fever had fallen from 984 in 1902 to 0 in 1909. The campaign has continued elsewhere and included the clearing up of Guayaquil in Ecuador, the chief endemic center of yellow fever on this continent in 1918-1919, the elimination of fever from Peru before the end of 1921, and the quick control of incipient epidemics in Central America. The Mexican government has participated actively in the movement, so that the authorities of the International Health Board have been able to give this summary of the situation in 1923: No cases reported from Mexico, Central America, Ecuador or Peru; outbreak in Colombia promptly put under observation; well organized control measures under way in northern Brazil, and workers in training to resume study and observation along the coasts of western Africa, from which cases of yellow fever have been reported.

President Vincent regards the outstanding feature during this year of the systematic, concerted attack on yellow fever to be the decision of the Brazilian government to undertake a definitive campaign to eliminate the disease from the seed beds along the northern coast from Para to Bahia, where fever still appears from time to time. The medical profession and the world at large look forward with enthusiasm and confidence to the successful outcome of what has been described [1] fancifully as Brazil's final bout with yellow fever. In the contemplation of the great accomplishments already made secure, we may recall that the path of science is always devious. Science essays this way and that, Lee [2] remarked a few years ago, and rarely reaches its goal over the course of a straight line. But the path of medical science, he adds, was never straighter than it has been during this modern epoch. The cause of this unprecedented progress is as complex as is that of any other movement of civilized man; but the most powerful single factor, undoubtedly, is experiment.

Ancient medicine is characterized preeminently by philosophical speculation and empiricism; modern medicine, by experimentation. In these days, when certain essential modes of conducting experiments meet attacks that vary in degree from slight limitations to total prohibition, it is wholesome to recall these profound remarks of a student of medical progress:

> The altruism of men of medicine has become proverbial. Their heroism in investigating and treating disease is often put to the test, and is rarely found wanting. Their ideals are high, and they can be trusted to do what is within their power to put an end to the ills of suffering humanity. Yet it

1. Vincent, G. E.: The Rockefeller Foundation: A Review for 1923, New York, 1924.
2. Lee, F. S.: Scientific Features of Modern Medicine, New York, 1911.

should be borne in mind that scientific medicine unaided has a well-nigh impossible work before it. If it is to accomplish the final banishment of disease, it must have the sympathetic cooperation and encouragement of mankind, in whose interests it continually labors.

ATHLETICS AND THE HEART

It has been said that athletic training is mainly heart training. There is some distinction between exercises of strength and those of endurance; in the latter, the aggregate of work done is much greater. Activity is supposed to stimulate growth, whereas the inertia of an ordinarily active part of the body may lead to retrogressive changes, if not to actual atrophy. The question has often been asked, therefore, whether increased heart work induced by exercise regularly leads to cardiac hypertrophy. The enlargement of the heart is not uncommon when abnormal conditions of the circulatory apparatus alter the usual progress in the flow of the blood. It has been asserted that, on roentgen-ray examination, athletes are found to have larger heart shadows than the average, and that soldiers exhibit similar manifestations during military training. Hewlett [1] has even stated that, beyond doubt, cardiac hypertrophy enables persons to perform greater feats of strength and more sustained feats of endurance; and to that extent he regards it as a favorable phenomenon.

Whether even moderate cardiac enlargements are of advantage in later life has been debated. Whereas the hypertrophy may be of advantage during the period of great muscular strain, Hewlett is certain that it is of no special help subsequently. Indeed, he admits that, like other forms of hypertrophy, it may cause an increased susceptibility to myocardial disease in after years. This has a bearing on the problem of the influence of athletics on health beyond the period of actual participation in contests; for while some have contended that the subsequent health of famous athletes shows no deviation from the normal, Brooks has maintained that such persons show in later life a peculiar tendency to cardiac affections.

Those who champion the athlete's cause will find satisfaction, therefore, in the measurements made on the participants in the American marathon race at Boston last year, by members of the staff of the Peter Bent Brigham Hospital.[2] Generally, the men who participate in this 25-mile race are the best long distance runners in the United States and Canada. It therefore seemed to be an exceptional opportunity to observe the effect of prolonged vigorous training and a strenuous prolonged effort on certain features of the circulation. The men had all been training for some months immediately preceding the race, and most of them had been doing long distance running for from five to fifteen or more years. The Boston investigators regard it as fair to say that such a group of men should show the effect of prolonged vigorous training, as running ten or more miles repeatedly and frequently under the pressure of competition year in and year out should test or develop the circulatory mechanism to a maximum. The average vital capacity of the lungs of the many participants was normal, which indicated that prolonged vigorous training did not increase the breathing space of the lungs. There was no important relationship between the vital capacity of the lungs and the order in which the runners finished. The size of the heart, as determined by the roentgen ray, was not increased. This indicated that many years of the most vigorous physical effort did not produce cardiac hypertrophy. Immediately following the race, it seems that there was a temporary decrease in heart size, gradually returning to normal in about one day.

1. Hewlett, A. W.: Pathological Physiology of Internal Diseases, New York, D. Appleton & Co., 1917.
2. Gordon, Burgess; Levine, S. A., and Wilmaers, A.: Observations on a Group of Marathon Runners, with Special Reference to the Circulation, Arch. Int. Med. **33**: 425 (April) 1924.

Current Comment

THE PHYSICIAN AND THE CHEMICAL TRADES

Emphasizing the thesis that the stability of the American chemical industry, like any other enterprise, is first of all dependent on the health of its personnel, the Committee on Occupational Diseases and Hazards in Chemical Trades has recently stressed anew to the American Chemical Society the need of bringing first hand information on industrial hygiene, as it pertains to the industry, to the industrial chemist and the chemical engineer.[1] The appeal might well have been put on a broader basis of humanitarian consideration that places the welfare of mankind above that of any industry. The medical profession has long recognized the importance of the study of the relations of occupations to health and longevity. Long before the publication of Ramazzini's classic monograph De Morbis Artificium Diatriba, in 1700, there were indications in the writings of Hippocrates and Galen that certain occupations and trades, even in those primitive periods, were dangerous to health. Despite this long continued general interest in the hazards of trades, few physicians realize the numerous ways in which harm can arise from chemical sources. The dermatoses, due to well defined chemical substances, for example, represent a large and growing field of clinical interest that is shifting with changes in industrial practices. The metallic poisons, such as lead, mercury and zinc, have long had a recognized place in the study of industrial hygiene. Profound changes in our national life, as instanced by the wide extension in the use of illuminating gas and of the gas engine, notably in the automobile, have brought the danger of carbon monoxid asphyxia to the front. Radium has contributed a medley of blessings and dangers. The war gases and the newer explosives and volatile solvents have brought man into unexpected relations with formerly unanticipated environmental factors inside as well as outside the factory that manu-

1. Report of the American Chemical Society Committee on Occupational Diseases and Hazards in Chemical Trades, Indust. & Engin. Chem. **16**: 644 (June) 1924.

factures or employs them. Methyl alcohol has achieved an unenviable medical notoriety. These are a few intimations of the problems of altering industrial conditions that have forced themselves to the attention of physicians. It will surely be helpful if the industrial agencies are made to appreciate more fully their responsibilities and their concern in these modern changes.

ENTERS THE "NEUROCALOMETER"

Probably most of those who have made a study of quackery and pseudomedicine have reached the conclusion that charlatanry of the mechanico-electrical type had reached its apotheosis in Abrams' fantastic pieces of apparatus. But chiropractic has gone the E. R. A. one better, and presents to a palpitating world the "Neurocalometer"—a measurer of nerve heat! This marvel, as is fitting, emanates from the Fountain Head of Chiropractic—the Palmer School of Chiropractic, Davenport, Iowa. Chiropractors are being circularized, their interest whetted, and they are urged to send in their orders early. The description given of the device is rather hazy, but the Neurocalometer appears to be essentially a thermopile or possibly two thermopiles, one in each arm of the instrument. The two arms are, apparently, separated sufficiently to allow them to "straddle" the vertebral column. From the thermopile run wires which carry the weak electric current (always generated when a thermopile is subjected to differences in temperature) to a galvanometer. The latter, presumably, can be brought around so that the victim can see the pointer move over the dial. When the pointer stands at zero, it indicates a perfectly normal spinal column; when it swings to the right or left it is registering a "subluxation"! The economic possibilities of this device are surely unlimited. The thermopile part of the instrument is said to be made at the Palmer School of Chiropractic. Like Abrams' "Oscilloclast," the Neurocalometer cannot be purchased; it can only be leased. Like the Oscilloclast, too, it is sealed and the lessee signs a contract not to break or tamper with the seals. The "established price" of a lease of the Neurocalometer is $2,200—$1,000 cash at the time the contract is made and $10 a month for ten years. This makes Abrams' disciples look like pikers. As a special "introductory price," operative until July 1, 1924, these instruments will be leased for $1,200, in which $600 cash must be paid at the time of signing the contract and $5 a month paid for a period of ten years. After July 1, 1924, it will be $750 cash and $6.25 a month for ten years. There are numerous restrictions imposed on those who would lease this device, of which the least onerous is that requiring the lessee to charge his patient $10 for a Neurocalometer reading. It is necessary for the would-be lessee to declare what degrees he holds, from what school or schools he graduated, and whether his degrees and graduation were from "residential" or "correspondence" courses. No other college of chiropractic will be able to lease a Neurocalometer for class instruction, and, as a further means of boosting attendance at the Palmer "school," those who are considering taking up chiropractic as a trade are told that if they matriculate or enroll in any school except the Palmer School on or after Sept. 1, 1924, they will not be eligible to lease a Neurocalometer. The Palmer School of Chiropractic says that while the Neurocalometer "will not give electronic reactions of syphilis from the blood of a chicken," it "proves hot boxes." Altogether, the Neurocalometer should come up to the fondest expectations of its sponsors. It will be a great business getter for the Palmer School of Chiropractic; it will bring in a handsome income to that institution and to the chiropractors that rent the device. And the ever gullible public will pay the bill.

INDUSTRIAL ASPECTS OF HEART DISEASE

If it is true, as has been reported, that one man in fifty has some form of heart disease, the problem of employment for at least a certain number of patients suffering from heart disease cannot well be disregarded. The solution of the problem belongs largely in the field of the social worker, whose ingenuity often succeeds where both the physician and the family fail. The physician usually starts with the dictum that rest is the foremost consideration for the person with heart disease, and the family accepts the advice because of its obvious reasonableness. A damaged mechanism usually cannot continue to operate with safety. This analogy doubtless applies to the human heart when compensation has failed; but when the physiologic situation is less threatening, heart disease and industry are not so incompatible as they are popularly considered to be. Of course, the foremost question concerns the exact diagnosis and the determination of how much work the patient can be expected to do without detriment.[1] Functional tests of various sorts are now available as aids in this connection. Frequently the best test lies in an attempt at the job itself. A recent student of the subject[2] has observed patients with heart disease working successfully at many different occupations, ranging from light clerical work to the heavy task of the longshoreman. The secret of carrying on successfully, Lincoln[2] concludes, lies in avoiding the features universally taxing to such patients, and in keeping hours of activity and recreation within the boundary in which symptoms appear. There is a well marked tendency among the afflicted to gravitate toward less strenuous occupations after the onset of heart disease. If these persons not only can work but should work, for social as well as for personal reasons, it becomes imperative for industry to find a place for them. White[1] insists that there is no industrial heart disease known. If industry could be relieved of undeserved blame for the occurrence of heart failure among its workers, cooperation in helping the less fit might be more readily secured. The problem of workmen's compensation payments looms large in the eyes of the employer. Physical examinations and medical inspection might help to exempt properly those who should not be held responsible for the onset of symptoms of failure in persons whom they have been considerate enough to take into

1. White, P. D.: The Problem of Heart Disease in the Industrial Worker, J. Indust. Hyg. 3: 219 (Dec.) 1921.
2. Lincoln, Miriam: Industrial Aspects of Heart Disease: A Study of Eighty Industrial Workers from the Cardiac Clinic of the Massachusetts General Hospital, J. Indust. Hyg. 6: 1 (May) 1924.

their employ.[3] The plea for friendly cooperation, including justice to all parties concerned, ought not to remain unheard. A splendid opportunity for large social service lies open before the trained enthusiast.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Public Health News.—The first of a series of public health meetings of the Monroe County Medical Society was held at Clarendon, June 10. Dr. Luther H. Stout, Brinkley, spoke on the value of periodic health examinations.

CALIFORNIA

Chiropractor Jailed.—According to reports, J. D. Reynolds, chiropractor, was arraigned on a charge of manslaughter, recently, in Los Angeles, and was held on a $10,000 bond following the death of a 4-year-old child, a patient, at his office. The child died of diphtheria.

Medical School Approved by State Board.—At a meeting of the Pennsylvania Board of Medical Education and Licensure, June 28, the College of Medical Evangelists of Loma Linda was formally approved, and its graduates will hereafter be admitted to examinations in Pennsylvania.

Round-Up of Fake Doctors.—Beginning this month, the state will make a round-up of illegal practitioners throughout California in connection with the recent diploma mill exposé. Harry Brundidge, the St. Louis reporter, responsible for the Missouri investigation, has been lent by the *Star* to aid the California authorities.

COLORADO

Medical School and Hospital.—George A. Collins, superintendent of the General Hospital, Denver, has been appointed manager of the new state hospital and medical school, Denver. These buildings were made possible by a legislative appropriation of $600,000; a gift of $750,000 from the Rockefeller Foundation; a public subscription of $200,000; a gift of land by F. G. Bonfils, and a gift from the Carnegie Foundation.

CONNECTICUT

Yale Medical Building Sold.—The property on York Street, New Haven, for many years used by the Yale University School of Medicine, has been sold by the university for $110,000. There are four buildings on the land. In addition to the medical school proper there is a chemical laboratory and a dispensary.

IDAHO

State Medical Meeting.—The thirty-second annual session of the Idaho State Medical Association was held at Boise, June 20-21, with Dr. Fred A. Pittenger in the chair. The following officers were elected to serve for the ensuing year: president, Dr. Casper W. Pond, Pocatello; vice president, Dr. Edgar L. White, Lewiston, and secretary-treasurer, Dr. Joseph N. Davis, Kimberly. The next meeting will be held in Pocatello, June, 1925.

ILLINOIS

Instruction in Tuberculosis.—A free school of instruction in the diagnosis and treatment of tuberculosis was held at the Public Library, Jacksonville, June 25, under the auspices of the Morgan County Medical Society and the Jacksonville Clinical Association. Addresses were given by Dr. George T. Palmer, Springfield; Dr. James S. Pritchard, Battle Creek, Mich., and Drs. James W. and Roswell T. Pettit of Ottawa.

Medical History in Illinois.—Under the auspices of the state medical society a history of medical practice in Illinois is now being compiled. As this history will cover a period of 250 years, all possible assistance is asked as to personal data and experiences, diaries, photographs and documentary mementos of pioneer Illinois physicians. It is requested that all physicians, former residents of Illinois, or descendants of pioneer physicians of the state, communicate with the committee on medical history, Illinois State Medical Society, 6244 North Campbell Avenue, Chicago.

INDIANA

Judge Reverses Order of State Board.—Asserting that the Indiana State Board of Health exceeded its authority when it condemned eight old one-room school houses in Green Township as insanitary and unfit for educational purposes, Superior Court Judge Oare reversed the order of the board, June 24. These buildings were twice ordered abandoned by the health board last year.

Free Laboratory Service.—At a meeting of the state board of health with a committee from the Indiana State Medical Association, June 25, in Indianapolis, it was decided that in the future when tests are made at the state board of health's laboratory, a notice that the examination was made without charge, will be sent to the patient. This policy was agreed to following complaints that some physicians who had had tests made charged the patients for the tests.

IOWA

Des Moines Valley Medical Society.—At the annual conference of this association in Ottumwa, June 18-19, Dr. Charles B. Powell, Albia, was elected president; Drs. Edward A. Sheafe, Ottumwa, and Emil G. Grove, Fairfield, vice presidents, and Dr. Harold A. Spillman, Ottumwa, secretary-treasurer.

Physician Sentenced.—Dr. Clarence H. Hanson, Eagle Grove, was sentenced to one year and a day in Fort Leavenworth penitentiary, June 19, by Federal Judge Scott at Fort Dodge, on a charge of violation of the Harrison Narcotic Law. Dr. Hanson, on a similar charge two years ago, was fined $300.

KENTUCKY

Physicians Fined.—Two Somerset physicians, Drs. James A. Bolin and Galen E. Jasper were fined $1,000 each in the federal court, Lexington, June 10, on charges of violating the Harrison Narcotic Law, it is reported.

Tuberculosis Hospital Enlarged.—It has been announced that Hazlewood State Tuberculosis Sanatorium, Louisville, is open for the reception of fifty more patients, following the completion of improvements costing $30,000. The sanatorium, of which Dr. Samuel W. Bates is superintendent, now has a capacity of 100 beds.

LOUISIANA

Physician Fined.—According to reports, Dr. John Luther Pittman, Cedar Grove, was sentenced to three months in jail and to pay a fine of $300, recently, on charges of violating the Harrison Narcotic Law.

MAINE

Maine Medical Association.—At the seventy-second annual meeting of the association in Portland, June 25-27, Dr. Fred W. Mann, Houlton, was elected president; Dr. Joseph D. Phillips, Southwest Harbor, president-elect; Drs. Nathaniel M. Marshall, Portland, and Carl Stevens, Belfast, vice presidents, and Dr. Bertram L. Bryant, Bangor, secretary. The next meeting will be held at Bar Harbor, June 1925. Dr. William A. Pusey, Chicago, President of the American Medical Association, gave an address. The house of delegates voted to carry out the program relative to periodic health examinations and also to cooperate with the state public health association in holding clinics for crippled children.

MARYLAND

Personal.—Prof. H. Wari, director of the Japanese government railroad hospital at Kobe; Prof. M. Ito, director of the hospital at Korea, and Drs. Nobechi, Tanabe and Inouye, who have been sent by the Japanese government to visit hospitals in the United States, recently visited the Johns Hopkins Hospital as the guests of Dr. Warfield T. Longcope.

Ice Cream Regulations.—The chief of the bureau of food and drugs of the state health department, has notified ice cream manufacturers in the state of the requirements of the new ice cream law, which went into effect, June 1. This law

3. White, P. D.: The Heart Disease Problem in Industry, Nation's Health 4: 553, 1922.

requires a butter fat content of from 8 to 10 per cent. in plain ice cream, and of from 6 to 8 per cent. in fruit or nut ice cream.

MASSACHUSETTS

Physician's License Restored.—At a meeting of the board of registration in medicine, Boston, June 5, it was voted to restore the license to practice medicine of Dr. Walter B. Willey, Jr., Everett (THE JOURNAL, May 26, 1923, p. 1527).

MICHIGAN

Health Officers Organize.—At a meeting in Lansing, June 18, the Michigan Conference of Full-Time Health Officers was organized with Dr. C. A. Neafie, Pontiac, secretary, and Dr. William DeKleine, Saginaw, president. The smallpox situation in Michigan was the chief subject of discussion.

Woman Chiropractor Jailed.—According to reports, Mrs. Jennie Filbey, Ionia, was sentenced, June 10, to three months in jail for practicing medicine without a license. Mrs. Filbey also was fined $200, to be paid within three months, or her prison sentence will be prolonged. Her husband, Frank Filbey, preceded her to jail, two weeks previously, on a similar charge.

MINNESOTA

New Appointments.—Dr. LeRoy A. Calkins, assistant professor of obstetrics and gynecology at the University of Minnesota Medical School, Minneapolis, has been appointed professor and chief of the department of obstetrics and gynecology at the University of Virginia Department of Medicine, Charlottesville, Va.——Dr. Carl Arthur Hedblom, since 1917, surgeon in charge of the division of chest surgery at the Mayo Clinic, Rochester, has been appointed professor of surgery at the University of Wisconsin Medical School, Madison. He will also act as surgeon at the new state hospital.

MISSISSIPPI

Personal.—Dr. Robert S. Curry, Jackson, member of the legislature from Hinds County, has resigned to accept the position of state factory inspector.——Dr. Felix J. Underwood, recently appointed executive officer of the state board of health, delivered an address before the Canadian Social Welfare Conference in Toronto, June 28.

MISSOURI

License Revoked.—The state board of health has revoked the license to practice medicine issued to Dr. Henry F. Mikel, Columbia, for an indefinite period on charges (which were sustained at his trial) of committing a criminal abortion.

NEBRASKA

Personal.—Dr. John B. Fulton, Beatrice, celebrated his ninety-first birthday, June 9.—— The honorary degree of doctor of laws was conferred on Dr. James S. Foote, Omaha, by Creighton University at the recent commencement.——Dr. Marie Pool, Lincoln, who has been appointed a medical missionary, will be in charge of a hospital at Chungking, West China.

NEW HAMPSHIRE

Summer Health School.— The New Hampshire Health Institute was held at the University of New Hampshire, Durham, June 30-July 12. Lectures were given on questions in fourteen sections. The institute was conducted by the state board of health and education in cooperation with the university, the state tuberculosis association, the department of agriculture and other health agencies.

NEW JERSEY

Octogenarian Celebrates.—Dr. Obadiah H. Sproul, Flemington, a graduate of the University of Pennsylvania School of Medicine in 1866, celebrated his eightieth birthday recently. Dr. Sproul was at one time president of the state medical society and, it is said, has attended every meeting but two for the past sixty years.

Chiropractor's Substitute Arrested.—Fred H. Kneirim, New York, a chiropractor, who has been in Hoboken caring for the practice of John H. Conover while the latter serves a thirty-day sentence in the county jail for practicing chiropractic without a license (THE JOURNAL, May 31, p. 1789), was arrested on a similar charge, June 2.

NEW MEXICO

Death Registration Area.—The U. S. Census Bureau has notified the city of Albuquerque that it has been admitted to the U. S. registration area for deaths.

NEW YORK

Society to Buy Home.—At the annual meeting of the Bay Ridge Medical Society, June 10, it was stated that "The Mansion" on Colonial Road would be purchased as a permanent home for the society. A medical library will be installed.

University News.—At the seventy-eighth annual commencement exercises of the University of Buffalo, Dr. Descum C. McKenney was elected president of the alumni association. Dr. Byron Pierce, Cooper Plains, the oldest living alumnus, representing the class of '61, gave an address.——The new Medical College of the University of Rochester was dedicated, June 14, with the laying of the cornerstone by Dr. Benjamin Rush Rhees, president of the university. Dr. Edward Bright Vedder, Lieut. Col. M. C., U. S. Army, was the principal speaker.

New York City

Hospital News.—The Bronx Hospital changed its tradition of excluding women from its staff by appointing Drs. Pauline Seller and Anna Koslow, graduates of Bellevue Hospital Medical College, as interns.——The state board of charities has issued a charter for the erection of an Italian hospital in Brooklyn. A $1,000,000 hospital building drive fund will be conducted in the fall for this purpose.

Industrial Hygiene Institute.—Fordham University will open an extension institute in industrial hygiene for nurses, the courses being given at the Social Service School on the twenty-eighth floor of the Woolworth Building on Tuesday evenings for fifteen weeks, beginning September 30. All registered nurses are eligible. Applications should be addressed to the Registrar, Room 2866 Woolworth Building, New York City.

Prenatal Care.—The Henry Street Settlement, Manhattan, which has been caring for expectant mothers, finds that on account of the demands of seriously ill patients, it can no longer do prenatal work except when the patient presents an abnormality. To fill the gap thus created, the Health Commissioner has ordered the bureau of child hygiene to organize and hold mothers' club meetings, beginning the work in the borough of Manhattan. These meetings will be held in all baby health stations not already doing prenatal work from two to four in the afternoon.

Quacks Apprehended.—According to reports, Vincenzo Marda, a marble carver, was convicted in special sessions recently of violating the state medical practice act. It was stated that he gave "medical attention" to a patient and accepted fees amounting to $900.——Salvatore Surini, a Bronx naturopath, was arrested, May 8, on a charge of robbery and blackmail, it is reported.——Louis M. Sussman, chiropractor of Brooklyn, was found guilty of practicing medicine without a license, June 20, and sentenced to sixty days in the workhouse.——Following investigation of Dr. Orin W. Joslin's "Spectro-Electronic Foundation" (THE JOURNAL, June 7, p. 1871) the District Attorney's office investigated, May 22, the Central Health Institute at 40 West Fifty-Seventh Street. Hedley V. Carter and Mrs. Flora McNair, who conducted the place, were arrested. Abrams' electronic method was used to examine the detective's blood. The district attorney stated that followers of this method have a list of victims which they send to each other, and that when a patient feels he is not making progress in one place he is told to try another.——Mrs. Adele Flutch was sentenced to sixty days in the workhouse in the Court of Special Sessions, May 2, for practicing medicine without a license, according to reports. Sentence was suspended when she promised to refrain from practicing "naturopathy."——Mrs. Lily Paisecka, convicted of swindling by representing herself as a physician, was sentenced to the penitentiary for not less than six months nor more than three years by Judge McIntyre, June 2.——The conviction of Ernest G. J. Meyer, chiropractor, found guilty of second degree manslaughter by a jury before Supreme Court Judge Hagarty, April 8 (THE JOURNAL, April 26, p. 1369), was sustained, June 24, by the Appellate Division.——Carl Nelson, chiropractor of Freeport, L. I., who was recently convicted of practicing medicine without a license, has been fined $100. He was at first given a sentence of one year in the Westchester Penitentiary, but the execution of this sentence was suspended.

OHIO

Personal.—Dr. Fred F. DeVore, Whitehouse, has been appointed county health commissioner of Lucas County to succeed Dr. Charles Koenig, and will assume that office, January 1. Dr. Koenig is temporarily absent, but will return to resume the office until January.——Dr. James C. Walker, Jr., Dayton, has been appointed chief of staff of the Barney Community Center.——Prof. Eugene L. Porter, Ph.D., assistant professor of physiology at Western Reserve University, Cleveland, has been appointed professor of physiology at the University of Texas Department of Medicine, Galveston, succeeding Dr. Charles C. Gault, resigned.

Hospital News.—The Belmont County commissioners have let the contract for a new $175,000 county sanatorium building at St. Clairsville.——The city of Lima has accepted a site on Collett Street for the new $600,000 city hospital.——The new children's hospital building at Columbus, erected at an expenditure of $525,000, was recently opened. A school for nurses will be opened in the fall, and a site for the nurses' home has been purchased. Dr. Marion B. S. Reynolds has been appointed superintendent of the institution.—— The cornerstones of two hospitals in the Western Reserve University-Lakeside Hospital group were laid, June 20. The two buildings, to be erected at a cost of $3,300,000, will be completed in 1925.

OKLAHOMA

Hospital News.—Improvements costing nearly $100,000 have been made at the Eastern Oklahoma State Tuberculosis Sanatorium, Talihina. They include a recreational hall, electric light plant and additional wards.——The Tisdal Hospital, Elk City, has completed its addition, which is now being furnished.

OREGON

Physician's License Revoked.—At a meeting of the state board of medical examiners, June 16, the license of Dr. Charles J. Dean, Portland, was revoked for fraudulent advertising, according to the secretary of the board.

PENNSYLVANIA

Vaccinate All Pittsburgh.—On July 5, physicians were sent to nineteen public health clinics to vaccinate citizens in accordance with the mandate issued by the city health board, ordering all residents of the city to be vaccinated to prevent a smallpox epidemic. There have been eight deaths from smallpox reported since June 8.

Field Motor Laboratory.—New methods for protecting motorists and residents of outlying districts in the state of Pennsylvania, from contaminated water supplies were started, July 2, when the first field laboratory truck of the state department of health left Philadelphia for a three months' tour of the principal highways of the state to inspect springs, wells and public drinking places.

Philadelphia

Hospital News.—Ground was broken, June 24, by Mayor Kendrick of Philadelphia for the Shriners' Hospital for Crippled Children on Roosevelt Boulevard, adjoining Pennypack Park. In addition to this hospital on Roosevelt Boulevard, a fund is being raised to build and endow the W. Freeland Kendrick Convalescent Home for Crippled Children, which will adjoin the Shriners' hospital.——The Louis H. Eisenlohr Home for Nurses of the Methodist Episcopal Hospital, erected by the executors of the Eisenlohr estate as a memorial to the manufacturer, was formally dedicated, June 24.——The Mount Sinai Hospital will erect a six-story nurses' home on Fifth and Reed streets at a cost of approximately $180,000.

SOUTH DAKOTA

Personal.—Dr. Charles L. Bury, Parker, has taken over the hospital conducted by the late Dr. Frederick E. Fyle at Geddes.

TEXAS

Hospital News.—A sanatorium will be erected on Cotton Avenue, El Paso, by Dr. Robert B. Homan at a cost of $157,000.——The contract has been awarded for the erection of a hospital at Seymour for Baylor County at a cost of $32,000.——The Ennis Hospital, Ennis, costing approximately $50,000, is nearing completion. It is four stories high.—— The new Jefferson Davis Hospital, Houston, plans the erection of a $25,000 nurses' home, a $25,000 isolation ward and venereal disease clinic, costing $10,000.——The James Autry, Jr., Memorial Hospital and School will be erected near the present tuberculosis hospital, Houston, at a cost of $50,000. It will be used to treat tuberculous children.

UTAH

Goiter in Utah School Children.—Children in the public schools of Utah are to be given 10 milligrams of iodin once a week as a prophylactic against goiter, under the auspices of the state health department.

State Medical Meeting.—At the thirtieth annual meeting of the Utah State Medical Association in Logan, June 19-21, Dr. Sol G. Kahn, Salt Lake City, was elected president; Dr. Thomas C. Gibson, Salt Lake City, president-elect; Drs. David C. Budge, Logan, James Cecil Clark, Provo, and Charles Ruggeri, Jr., Price, vice presidents; Dr. Thomas A. Flood, Salt Lake City, treasurer, and Dr. William L. Rich, Salt Lake City, secretary.

VIRGINIA

Rehabilitation Work in Richmond.—During the last two years the bureau of rehabilitation of Richmond has investigated 500 cases of handicapped persons of whom more than 100 have been placed in training and about fifty satisfactorily employed, according to the director of the bureau. There are now in training about seventy-five persons. The average cost for each person trained is about $166, which includes salaries and expenses of employees and overhead charges of the bureau. Artificial limbs were purchased for seventy-five persons.

WEST VIRGINIA

County Medical Meeting.—At the annual meeting of the Ohio County Medical Society at Wheeling, May 23, Dr. Edward S. Bippus was elected president; Dr. John E. Marschner, vice president, and Dr. Harry W. Bond, secretary.

WISCONSIN

State Medical Examiners Elect.—At the semi-annual meeting of the Wisconsin State Board of Medical Examiners at Milwaukee, June 24, Dr. James Gurney Taylor, Milwaukee, was elected president and Dr. Robert E. Flynn, La Crosse, secretary. Other members of the board are Drs. Minnie M. Hopkins, Oconto; George H. Ripley, Kenosha; Robert B. Cunningham, Cadott; Royal C. Rodecker, Holcombe, and Jay B. Brewer, Jefferson.

WYOMING

State Medical Meeting.—At the twenty-second annual meeting of the Wyoming State Medical Society held at Cody, June 17-19, under the presidency of Dr. Jesse D. Lewellen, Powell, Dr. Alexander B. Hamilton, Laramie, was elected president for the ensuing year; Drs. Irwin W. Blake, Buffalo; Joseph C. Kamp, Casper, and Maurice Goldberg, Kemmerer, vice presidents; Dr. E. Earl Whedon, Sheridan, secretary, and Dr. Chester E. Harris, Basin, treasurer. The 1925 conference will be held in Buffalo.

CANADA

Canadian Medical Association.—At the annual meeting of the Canadian Medical Association held in Ottawa, June 17-20, under the presidency of Dr. John F. Kidd, Ottawa, the following officers were elected for the ensuing year: president, Dr. David Low, Regina, Sask.; editor of the *Canadian Medical Association Journal*, Dr. Alexander D. Blackader, Montreal, Que.; treasurer and managing editor, Dr. Alfred T. Bazin, Montreal; chairman of council, Dr. Alexander Primrose, Toronto, and general secretary, Dr. Thomas C. Routley, Toronto.

Hospital Construction.—The new Notre Dame Hospital, Montreal, is nearly completed, and will soon be ready for occupancy. This property was the gift of the late Sir Rodolphe Forget. Dr. Oscar F. Mercier will be medical superintendent.——The cornerstone of the Shriners' Hospital for Crippled Children, Montreal, was laid recently. The building will be erected adjacent to the Children's Memorial Hospital on the slope of Mont Royal at a cost of about $500,000.——The Kiwanians are erecting a building for the Children's Memorial Hospital, Montreal, to be devoted to tuberculous patients.——The residence of the late Lord Shaughnessy, Montreal, is being fitted up as a temporary home for St. Mary's Memorial Hospital.——The new wing

of the Woodstock, Ont., General Hospital, which was built and equipped at an expenditure of $120,000, was formally opened last month. Dr. Helen MacMurchy, Ottawa, gave an address.

University News.—Sir William Mulock, chief justice of Ontario, has been elected chancellor of the University of Toronto.——A free course for graduates will be given in September by the Dalhousie University Faculty of Medicine, Halifax, Nova Scotia. Among the lecturers will be: Sir Henry Grey, Drs. Walter W. Chipman and Lawrence J. Rhea of Montreal; Dr. Robert D. Rudolf, Toronto, and Dr. Luther B. MacKenzie, New York City.——In the announcement of the faculty of public health for 1924-1925 by the Western University Faculty of Medicine, London, Ont., the eleventh report of the Institute of Public Health is included.—In response to criticism of the board of governors of the University of Toronto Faculty of Medicine in regard to the acceptance of certain gifts with conditions attached determining questions of organization and other matters, a committee was appointed, some time ago, to inquire into the subject. An amendment has been made to the university act which provides for graduate representation on the board of governors, with a view to systematizing the academic and business functions of the governing body.—— Western University Faculty of Medicine, London, Ont., will, it is understood, receive bequests amounting to $110,000 under the will of the late Dr. F. R. Eccles, who for many years was dean of the faculty of medicine at the university.—— Of the $650,000 donated to the University of Toronto Faculty of Medicine by the Rockefeller Foundation, $400,000 will be expended for the erection of a school of hygiene and the remaining $250,000 will be used for endowment. This school will include the department of preventive medicine and public health nursing and the Connaught Laboratories, the research fund of which will be used for endowment.

GENERAL

Journals for Physicians in Jugoslavia.—Dr. Rosalie S. Morton, 100 Central Park South, New York City, who has spent a number of years in Jugoslavia, requests unbound copies of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and other reliable medical journals which physicians no longer want, in order that she may forward these journals to physicians in Jugoslavia.

Renewal of Liquor Permits.—Although permits to prescribe intoxicating liquor, issued under the National Prohibition Act, do not expire until December 31, physicians desiring to renew such permits must file applications not later than August 31. Hospitals, sanatoriums and other institutions desiring to renew permits to keep intoxicating liquor for administration to inmates must take similar action.

Review of Public Health Activities.—The *Journal of the Royal Sanitary Institute*, London, for June, 1924, has as its leading article a review of the survey of public health activities in the United States by Charles Porter, who was one of the members representing England in the Interchange of Health Officers of the League of Nations, which made an extensive tour of the United States in 1923. The article is generally complimentary concerning conditions observed.

Pamphlets on Mental Hygiene.—A set of leaflets prepared by the Massachusetts Department of Mental Diseases has been issued by the National Committee for Mental Hygiene. The set, known as the Thom series, covers the following subjects:

1. Does your child fuss about his food? 2. Being a parent is the biggest job on earth. 3. Do you make the most of your child's intelligence? 4. Is your child jealous? 5. Does your child have temper tantrums? 6. Obedience. 7. Enuresis (bed-wetting). 8. Convulsions. 9. Some conditions in children that would suggest the use of a habit clinic.

The complete set of leaflets costs ten cents.

Orthopsychiatric Association Organized.—At the first annual meeting of the American Orthopsychiatric Association held at the Institute for Juvenile Research, Chicago, June 10, the following officers were elected: president, Dr. William Healy, Boston; vice president, Dr. Arnold L. Jacoby, Detroit, and secretary-treasurer, Dr. Karl A. Menninger, Topeka, Kan. Among the speakers were Drs. Douglas A. Thom, Boston; David M. Levy, Chicago, and Bernard Glueck and Victor V. Anderson of New York. The association was organized to study crime and other conduct disorders from a psychologic standpoint. Active membership is limited to psychiatrists engaged directly in the study and treatment of behavior disorders.

Violations of the Narcotic Law.—According to reports, Dr. Roderick D. McLeod, Lyons, Ga., was sentenced to one year in the penitentiary in the U. S. District Court, June 18, on a charge of violating the Harrison Narcotic Law.—— Dr. C. C. Cates, Chattanooga, Tenn., was sentenced by Judge Hicks to three years in the federal penitentiary at Atlanta, Ga., June 9, also on a charge of violation of the Harrison Narcotic Law. It was admitted that he had issued prescriptions for more than 50,000 grains of morphin in two years. ——Dr. Edwin H. Bowling, Durham, N. C., was fined $200 for violation of the law, in June, it is reported, and Dr. T. F. Jones, Raleigh, N. C., was fined $250 by Judge Connor, June 17, when he pleaded guilty to violation of the law.

States Bar Alien Physicians.—Following the lead of several other states, the state board of medical examiners of Texas announced, June 18, that aliens will not be permitted to take the examinations for license to practice medicine in that state until after they have filed their applications for naturalization papers. The other states which have taken action relative to foreign physicians are:

Indiana	Florida	Oklahoma	New York
Nebraska	Maryland	Louisiana	Michigan
Arizona	New Hampshire	Illinois	Pennsylvania

The majority of these states require actual citizenship (residence of five years) and all but a few states in the country require that the examination be written in English. Since the recent influx of foreign physicians to this country following the depreciation of money in Europe and other economic conditions (THE JOURNAL, April 26, p. 1366) other states are contemplating action along these lines. In Idaho, the department of law enforcement does not recognize medical schools outside of the United States and Canada and physicians before being registered must first become citizens of the United States.

Death of the President's Son.—THE JOURNAL has secured the following telegraphic statement relative to the illness and death of the President's son: "He suffered from a septicemia, subsequent to a friction blister, without any local lymphangitis or enlargement in the popliteal glands, and only moderate tenderness and enlargement of the inguinal glands. The original lesion healed promptly under continuous bichlorid soaks. The staphylococcus albus with moderate hemolysing qualities was recovered from the wound, the urine and four blood cultures. A blood culture made the day before death with 2.0 c.c. of blood showed 500 colonies to a small size Petri dish. A localization of the process appeared in the tibia in the other leg, which under a ten minutes' gas oxygen anesthesia and trephining revealed a positive smear without frank pus. The usual routine for sepsis was used, including numerous intravenous salines and continuous proctoclysis. Citrated transfusion of blood from a donor immunized with injections of a vaccine made from blood culture of the patient, stimulation with alcohol and other reagents were used. Sixteen c.c. of mercurochrome and 100 c.c. of staphylococcus antiserum were given intravenously. None of the usual reactions followed the mercurochrome. The white count varied from the patient's normal figures of 6,600 to 10,500, and on one occasion, 13,700, about three hours after the antiserum. The polymorphonuclears stayed at 74 per cent., rising on one occasion to 84 per cent. Ileus developed on the morning of the last day of illness."

Smallpox in Michigan and Canada.—During the first six months of 1924, 3,999 cases of smallpox were reported in Michigan. Of these, 1,532 were in Detroit and 2,513 in the rest of the state. From January 1 to May 30, there were 106 deaths from smallpox in Detroit, and twenty-seven in the rest of the state. From July 1 to July 5, there were forty-six additional cases, of which eight were in Detroit and thirty-eight in the remainder of the state. The epidemic seems, therefore, to be receding in its intensity. However, it is as yet too early to define its limitations. In combating the epidemic, the Michigan Department of Health, together with the physicians of the state, is promoting state wide vaccination. Special campaigns were carried out in Adrian, Battle Creek, Benton Harbor, Lansing and St. Joseph, and in the counties in which these cities are located. Indeed, it is estimated that outside the city of Detroit, 250,000 persons were vaccinated between June 10 and June 30, and in some counties practically 100 per cent. of the population was vaccinated. Combined with this vaccination, orders were issued banning tent shows, circuses and carnivals until a physician had certified that all the personnel had been recently vaccinated. As has been mentioned previously, the Michigan epidemic followed the serious outbreak in Windsor, Canada, February 2. On February 11, a citizen of Windsor died of hemorrhagic smallpox, so unusual in character that it was not recognized. Cases soon developed in Amherstburg,

Maidstone and Detroit, and these were traced definitely to the missed case. The health officer for the Canadian municipalities has issued a report showing how efficiently vaccination protected those who had been exposed. No person who had been vaccinated successfully at any time in his life died of smallpox. Of those who had never been successfully vaccinated, and who developed the disease, 71 per cent. died. The attack was invariably mild when it affected those who had been previously vaccinated. Moreover, no one who had been vaccinated successfully within twelve years developed smallpox. Nurses, whose only protection against the disease was vaccination, nursed the patients with the disease for weeks without contracting smallpox.

Society News.—At the annual meeting of the American Ophthalmological Society in Hot Springs, Va., June 16-18, Dr. Cassius D. Wescott, Chicago, was elected president; Dr. David Harrower, Worcester, Mass., vice president, and Dr. Thomas B. Holloway, Philadelphia, secretary-treasurer. The 1925 meeting will be held in Washington, D. C., May 5-6.——At the annual meeting of the American Society of Clinical Pathologists in Rochester, Minn., June 5-7, Dr. John A. Kolmer, Philadelphia, was elected president; Drs. Frederick E. Sondern, New York City, and Wilbur F. Thomson, Beaumont, Texas, vice presidents, and Dr. Ward Burdick, Denver, was reelected secretary-treasurer.——At the annual meeting of the American Urological Association in Atlantic City, N. J., June 3-5, Dr. Herman L. Kretschmer, Chicago, was elected president; Dr. Clarence R. O'Crowley, Newark, N. J., president-elect; Dr. Homer G. Hamer, Indianapolis, secretary, and Dr. James B. Cross, Buffalo, treasurer.——At the forty-first annual convention of the American Climatological and Clinical Association, at the Hotel Ambassador, Atlantic City, N. J., recently, under the presidency of Dr. Gordon Wilson, Baltimore, the following officers were elected for the ensuing year: president, Dr. George W. Norris, Philadelphia; vice presidents, Drs. David R. Lyman, Wallingford, Conn., and Philip Marvel, Atlantic City, N. J., and secretary-treasurer, Dr. Arthur K. Stone, Framingham Center, Mass. The next annual meeting will be held in Washington, D. C., in May, 1925.——At the eighteenth annual convention of the American Psychiatric Association in Atlantic City, N. J., June 3-6, the following officers were elected for the ensuing year: president, Dr. William A. White, Washington, D. C.; vice president, Dr. C. Floyd Haviland, Albany, N. Y., and secretary-treasurer, Dr. Earl D. Bond, Philadelphia.——At the twentieth annual meeting of the American Society of Tropical Medicine at Chicago, June 9-10, the following officers were elected for the ensuing year: president, Dr. Samuel T. Darling, Baltimore; vice presidents, Drs. Joseph F. Siler, Washington, D. C., and George C. Shattuck, Boston, and secretary-treasurer, Dr. Brayton H. Ransom, Washington, D. C. The next annual meeting will be held in Washington, D. C.——The seventh annual convention of the American Dietetic Association will be held at Swampscott, Mass., October 13-16, under the presidency of Octavia Hall Smillie of Andaluvia, Ala. The meeting will be divided into the following sections: administration, dietotherapy, education and social service. Headquarters of the association are at Riverside, Ill.

LATIN AMERICA

Personal.—Dr. M. R. Castex has returned to Buenos Aires from Madrid, Paris and Rome, where he lectured in medical schools. He was elected foreign member of the Académie de médecine at Paris.——Dr. E. Finocchietto has returned to Buenos Aires from Europe, where he was sent on a special mission to study hospital surgical services. He made a similar trip to the United States three years ago.——Dr. Gregorio Araoz Alfaro, chief of the public health service, has inaugurated a census of goiter and cretinism throughout Argentina, beginning with school children and intended to include the whole populace. The work has been started in an endemic focus, Rosario de Lerma. It is proposed to introduce preventive measures now endorsed in the United States and Europe.——Prof. Juan Arce, rector of the University of Buenos Aires, has been elected a foreign member of the Société nationale de chirurgie at Paris.——The Argentine Medical Association has elected Dr. J. C. Navarro, president; Dr. C. Bonorino Udaondo, vice president, and Drs. J. T. Lewis, E. Fidanza, F. R. Pasman and J. C. Ahumada, respectively, secretary, treasurer, assistant treasurer and librarian. ——Prof. V. Putti of Bologna, who has been lecturing in Argentina on orthopedics and kineplasty, was the guest of honor at a banquet given by the medical faculty of Buenos Aires before his departure.

FOREIGN

Trachoma in London.—According to reports there is an outbreak of trachoma in Poplar (a section of the city of London) among school children and infants. About 155 cases have been reported.

Scholarship Offered to French Student.—The Harvard Club of France has offered $1,500 to a French student who wants to work a year at Harvard, September, 1924, to June, 1925. The candidate must be under 25, and have a knowledge of English.

Memorial to Macewen.—Steps are being taken to inaugurate a suitable memorial to the life and work of the late Sir William Macewen (THE JOURNAL, April 5, p. 1132). A committee was appointed to decide what form the memorial should take.

Austrian Red Cross.—The Austrian Red Cross has recently reopened the tuberculosis sanatorium at Grimmenstein in the mountains, which during the World War was taken over by the Austrian army to care for tuberculous soldiers. The sanatorium was closed in 1922. Under the new régime the cost to the patient is about $1 per day, but indigent patients are cared for without charge.

The Naples Septicentennial.—A special number of the *Riforma Medica* and of the *Radiochirurgia* gives illustrated descriptions of the gala proceedings celebrating the foundation of the university at Naples by Frederick II in 1224. Parties of delegates from many countries brought congratulations, and several national and international congresses closed the week. Among the Naples alumni whose names are familiar in our "Anatomies" is Domenico Cotugno or Cotunnius.

New Medical Journal.—Under the title of the *Franco-British Medical Review*, a new medical journal will be published shortly by Messrs. John Bale, Sons and Danielsson, Ltd., London. It will contain an equal number of English and French articles by well known medical writers, the latter being translated into English, while the English articles will later be translated into French and will be republished in French journals for which arrangements have been made. Its object is to encourage the entente cordiale between the two nations.

Smallpox Menaces the Netherlands.—A special meeting of the Netherlands Medical Association was held at Amsterdam recently to discuss means to protect the country from invasion by smallpox. In the last half century there have been only 300 deaths from smallpox, but the present tendency of legislation to excuse conscientious objectors to vaccination is throwing down the barriers against epidemics. Conditions were said to be threatening in France and Belgium, and in England and Switzerland the number of cases is regularly increasing.

Personal.—Prof. L. Poussepp, of the Russian University of Dorpat, recently delivered an address with motion pictures at the Paris medical faculty on "Surgical Treatment of Brain Tumors."——Prof. T. Rovsing of the chair of surgery at Copenhagen has been elected honorary member of the Société nationale de chirurgie at Paris and of the Association of Surgeons of Great Britain.——Dr. E. Solano Rafecos of Madrid has left for Panama to assume charge of the Hospital for Urologic Surgery, at the request of the president of the Panama republic.

Foreign Meetings.—The third Pan-Pacific Scientific Conference will be held in Japan in 1925. The conference will cover five sections. Drs. Koganei and Nagai of the Tokyo Imperial University and Dr. Kitajima of Keio University have been elected the committee for the medical section.——The Congress of the Royal Institute of Public Health was held at Bordeaux, June 4-9, under the presidency of Viscount Burnham. The congress was divided into six sections, before which 120 papers were read. At the close of the session, excursions were made to Biarritz and the Pyrenees. The next congress will be held at Brighton, England, in 1925.

Chinese Medical Scholarships.—The council on health education is offering to each of the following medical schools a scholarship of $100 to be used during the school year 1924-1925: Mukden Medical College, Mukden; Peking Union Medical College; Shantung Christian University, Tsinan; St. John's University, Shanghai; Hangchow Hospital and Medical Training School and the Kung Yee Medical School, Canton.——The council is conducting also a prize essay contest, the subject being "Medicine as a Life Work," for

which $300 will be given in prizes. Only students in Chinese colleges may compete and the essays must be written in Chinese or English.

Decree Opens Italian Hospitals for Teaching Purposes.—A recent government decree requires the hospitals of Italy to affiliate with the universities. In all cities with medical faculties, the hospitals averaging less than 600 patients daily shall have clinics for teaching purposes according to the needs of the instructors. Hospitals with more than 600 patients can be utilized in the same way when needed. These regulations, it is stated, apply to all other public institutions which under various names cooperate in caring for the sick. The *Gazzetta degli ospedali*, May 25, gives the full text of the law, which provides further that all the clinics are to be operated the entire year, that all cadavers from the hospitals shall be submitted to comparison with the diagnosis, and that cadavers not claimed by families or societies shall be used for teaching purposes. Hospitals in places where there are no medical schools may be required to admit students or graduates under the control of the chief of staff.

Government Services

Promotion in the Medical Department Reserve

The Surgeon General of the army desires that officers of the medical department reserve be informed that existing War Department policy does not provide for the automatic promotion of reserve officers after each five-year appointment. Officers become eligible after each five-year period in grade for advancement to the next higher grade, but to secure promotion application must be made to the commanding officer of the corps area in which the officer resides. In this connection, the Surgeon General urges officers eligible for promotion to submit their applications at least ninety days prior to the expiration of the existing appointment, in order that reappointment may be made in the higher grade of those officers found qualified for promotion. Officers eligible for advancement whose applications are not submitted in sufficient time to effect reappointment in the advanced grades are advised to accept reappointment in the same grade when submitted by the adjutant general, with the assurance that promotion will follow if they are found qualified. Failure to accept reappointment automatically separates officers from the organized reserves by operation of law.

Increased Pay for Indian Service

As has been previously suggested in THE JOURNAL, physicians in the Indian service of the government will receive increases in salaries, averaging in each case from 75 to 100 per cent. The new salaries became effective, July 1, notwithstanding the fact that Congress failed to appropriate money specifically to carry into effect the provisions of the reclassification law relating to field employees of the government. The necessary funds with which to pay these increased salaries are secured, however, through the allocation to the first two quarters of the fiscal year (July 1 to Dec. 31, 1924) of other appropriations sufficient to adjust the compensation of physicians and others in the field service. Formal authority to the effect has been given by Director of the Budget, Gen. H. M. Lord, to the Secretary of the Interior.

Veterans in New Quarters

Trainees at the U. S. Rehabilitation Center No. 2, Federal Park, Md., will be housed in fourteen bungalows, which have just been completed. The men have been transferred from barracks which were declared by the director of the U. S. Veterans' Bureau to be unsuitable.

Hospitals for Indians

Two new hospitals will be opened this month by the government for the care and treatment of Indians. One of these will be a seventy-five bed tuberculosis sanatorium at Onigum, Minn., and the other will be a seventy-five bed general hospital at Shawnee, Okla. In both cases, the Bureau of Indian Affairs has arranged to use the site and buildings of former Indian schools, remodeling them for hospital purposes. It is said there are 13,351 Indians living in Minnesota, among whom are 480 cases of tuberculosis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 16, 1924.

The Advertising of a Quack Remedy for Cancer

The advertising of "Yadil," a proprietary antiseptic, as a remedy for cancer and other diseases in the *New Statesman*, an important and ably conducted organ of advanced liberal and even socialistic views, has aroused a lively controversy in its columns. This began with a letter from Mr. F. Steadman, a dentist and writer on dental subjects. He stated that he considered the *New Statesman* the best political paper in the country, but was compelled to discontinue it because of a flaring advertisement of "Yadil" as a cure for cancer. He wrote to the editor: "People of your intelligence must, of course, realize that the alleged cure of cancer by any drug is nonsense. It means that in order to get the money for this advertisement you are willing to encourage many, possibly hundreds, of poor unfortunate people to allow the precious first few weeks of their terrible disease to slip by while they try Yadil, only to seek the assistance of a surgeon when, too late, they come to realize that they have been tricked, and when, owing to the cancer having become disseminated in their systems, operation is hopeless. Had you seen the last few weeks of sufferers dying of cancer—the most terrible death I know of—I think you would not publish such advertisements, even for money."

To this the editor replied: "'People of our intelligence' do not realize that 'the cure of cancer by any drug is nonsense.' We know nothing about it, one way or the other; nor, apparently, does the medical profession. When the profession is able to tell us what cancer is, and how it can be cured, then it may be well to listen to its denunciation of unorthodox remedies. Meanwhile, since Harley Street cannot help us, why should we not try Yadil? Yadil appears to be an excellent drug for the counteracting of some forms of intestinal sepsis. Is there any accredited pathologist in the world who will deny, definitely and confidently, that certain cases of cancer may be due to intestinal sepsis, and that if the sepsis were eradicated the ordinary forces of the body might not be able to eradicate the cancerous growth? This idea may be altogether unfounded, and in any case it is not likely that it can apply to more than a comparatively small percentage of cases; but who is there who can assure us with scientific authority that it is 'nonsense'? Harley Street can tell us how to deal with diphtheria and malaria and syphilis, and any one who offers alternative treatment for these diseases is a self-convicted quack. But cancer belongs to another category. There is no known cure for it, and, if we had a near relative who was dying of it, and to whom the doctors offered no hope, we should certainly advise him or her to try all the unorthodox treatments, including even Yadil." The editor continues that, in any case, it is impossible for journalists to act as censors of medical advertisements except those which are obviously nonsensical or indecent. He makes a point that the Yadil people have offered to submit all the evidence to the presidents of the British Medical Association and to the general medical council, which he thinks is a guarantee of their honesty.

Mr. Steadman rejoined by pointing out the error of the editorial statement that there is no known cure for cancer. We now know that, if operated on early, it is quite curable. A recent pamphlet issued by the ministry of health stated that it is certain that 60 per cent. and highly probable that 75 per cent. of patients operated on early were alive for years after the operation. If the "Yadil" advertisement admitted

this and only recommended the drug as a possible last resource after operation failed or in inoperable cases, he would have nothing to say against it. In a re-rejoinder, the editor avoids this point by describing the cure of cancer as a technical matter which he cannot discuss. He tries to get out of the difficulty by saying that cancer is not a disease which the patient can diagnose and therefore cannot know that he is suffering from it until he has consulted a physician who, if operative treatment is desirable, will presumably advise him so. Therefore, the suggestion that sufferers will be deterred by the Yadil advertisement from seeking qualified advice until it is too late seems to be baseless. To this the obvious reply is made that nervous women who notice a lump in the breast at once think of cancer and often will not go to a physician because they fear operation and put off the evil day. In their anxiety to avoid hearing the worst, they snatch at an advertised remedy for cancer such as "Yadil," thinking that if the lump is really not cancerous the remedy can do no harm, and if it is there is the chance of a cure without operation. Thus they lose valuable time.

Statistics of the Medical Profession

The number of new practitioners registered in 1923 was the highest on record; namely, 2,482, including 244 in the colonial and foreign lists. In 1918, the number of medical students registered was 2,253; in 1919, the number rose to 3,420. Assuming that of the 5,673 students registered in these two years—the majority being men demobilized from the forces—some 3,000 have now completed their course of medical study, it appears that about 80 per cent. have now become qualified and registered. As after 1919 the number of new students, which had so greatly increased during the war, rapidly fell, it follows that for the next few years the numbers added to the register will fall in proportion and soon should reach the prewar figure of 1,200 or so. The comparatively small number of students registered in 1923, namely, 545, seems to be due to the fact that under the new regulations the student must now postpone his registration until, in addition to his examination in general education, he has also passed a recognized examination in elementary chemistry and physics. It is expected that the next year's figures will be considerably higher and represent more truly the numbers undertaking the medical curriculum. The period of strain in the medical schools, due to the abnormal number of entries following the war, is practically at an end.

PARIS

(From Our Regular Correspondent)

June 6, 1924.

The Ophthalmologic Congress

In his communication to the Société française d'ophthalmologie, at its annual reunion, Dr. G. E. de Schweinitz reported a series of cases in which ocular affection was due to a remote focus of infection. Thus, senile changes of the macula (central choroiditis and retinochoroiditis) may be due to certain nonspecific infections of the prostate or to other localized infections. Elimination of the foci of infection is followed by the rapid or slow disappearance of the metastatic ocular affection. We must first discover and then cure these foci of infection, often latent, and not neglect portals of entry that are apparently unimportant. Various pathogenic micro-organisms (staphylococcus, pneumococcus, streptococcus, *Bacillus coli,* etc.) are probably responsible for these infections, although, in certain cases, there appears to be a definite relation between a particular organism and a metastatic lesion; for example, between *Streptococcus viridans* in a dental infection and iritis.

In disseminated sclerosis, which one tends more and more to regard as an infectious disease, the eye symptoms resemble those of retrobulbar neuritis. They may be of infectious origin and point to a sinus infection, as was shown by observations of a patient made by Shumway over a period of nine years. In other instances, infections of the tonsils were the point of departure. De Schweinitz has observed cases of optic neuritis which were linked with a dental infection (apical abscess), and several cases of retrobulbar neuritis which were associated with the abnormal development of certain teeth and with infected dental cysts. Also the intestine may sometimes be incriminated as the source of toxic elements affecting the optic nerve.

OCULAR AFFECTIONS OF DENTAL ORIGIN

The program of the congress centered about the one topic, "Ocular Affections of Dental Origin," the opening paper having been contributed by Dr. Camille Fromaget of Bordeaux. Fromaget stated that ocular affections of dental origin have received a new flood of light through American researches on focal infection. Eye affections often appear in connection with the eruption of the teeth, which is accompanied by multiple perforations of the gum, which become portals of entry for the micro-organisms of the buccal cavity, and particularly for tuberculosis, which attacks so often in children the cervical and submaxillary ganglions. All the diseases of the teeth and the alveoli are important as contributory causes of ocular affections: caries with its complications, periodontitis, abscesses, fistulas, inflammations, circumscribed and diffuse osteoperiostitis, osteomyelitis, alveolar pyorrhea.

Dental infections may cause: (1) complications in the surrounding area, and (2) remote complications. The former may appear either in the lacrimal apparatus or in the orbit. The orbital complications are the more serious. Periodontitis, osteoperiostitis, osteomyelitis and sinusitis result occasionally in an orbital inflammation; more frequently in a phlegmon, which may entail loss of vision, destruction of the eyeball and even death from meningitis, cerebral abscess, phlebitis of the ophthalmic veins and of the cavernous sinuses. Transmission takes place through continuity and contiguity by the osteoperiosteal, cellular, lymphatic or veinous route. Some eye affections are due to the irritation or the infection of the trigeminus. Others are conditioned by reflex affections of the motor centers (excitation or paralysis). Still others are dominated by the sympathetic nerves, which control the ocular tonus. It is established that the sympathetic nerves play a part also in trophic affections. All these remote affections, except those due to mechanical trauma, originate from a microbic infection. Sometimes the dental focus remains locally circumscribed, irritating and infecting the terminals of the trigeminal and the sympathetic nerves, and inducing reflex disorders, although no micro-organisms may enter the eye. Sometimes the micro-organism, driven from the focus of infection, is carried by the circulation into the eye itself, where it may cause more or less serious affections. In almost all the cases, it may be noted that the eye lesion has its seat on the same side as the dental focus of infection. This unilaterality, the first law of reflex disorders, is in itself evidence of the important part the nervous system plays in eye affections. Often these reflex disorders are associated with ocular infection that results from focal infection. Infection is the precipitating cause; the reaction of the sympathetic nerve is the predisposing, localizing cause.

Ocular affections of dental origin do not appear to be very frequent, but no doubt many of them fail to be recognized because many ophthalmologists do not realize their importance. It is desirable that the dental etiology be inquired into with just as much care as any other; especially with reference to the numerous cases of uveitis the cause of which is unknown in spite of the most minute investigations. But it does not suffice for the establishment of dental etiology to confirm that the mouth is in bad condition; the causal rela-

tions of the two affections must be proved. To to this, one must look for dental or periapical lesions and make bacteriologic examinations of the dental, periorbital, orbital and even ocular foci. In septicemic infections, it will be necessary to make blood cultures. In the absence of a bacteriologic examination, it is indispensable, before the dental origin of the affections can be affirmed, that treatment solely dental shall effect a rapid cure which previous treatment could not accomplish. If the infectious foci are not visible, recourse should be had to roentgenography. Roentgenography is as indispensable for the dentist as ophthalmoscopy for the oculist. Curative treatment consists in the extraction of the incriminated tooth and the disinfection of the alveolar focus. Extraction is indicated in all serious cases with rapid development. When there is no immediate danger, an attempt may be made to preserve the offending teeth by eliminating the infectious foci. With our modern methods of disinfecting the dental canals, our progress in dental asepsis and antisepsis, it is useless to sacrifice healthy teeth when they can be saved. The results should, however, be controlled by roentgenography. Surgical treatment is much preferable to roentgenotherapy or radium therapy, the results from which have not been encouraging.

In the course of the discussion that followed the reading of the paper, Dr. Van Lint of Brussels remarked that, if until recently too little attention had been paid to dental etiology, there was some fear lest we now go to the other extreme. Dr. Morax of Paris emphasized the need of sifting carefully the facts, of establishing a definite and certain pathogenesis, and of separating out the cases (which are very numerous) in which the dental origin of the ocular lesions is still hypothetic. It was exceedingly difficult by means of bacteriologic examinations to establish the relations between a dental affection and an ocular localization. Dr. Dor of Lyons took the view that many cases of amblyopia supposedly due to eyestrain are only the sequels of retrobulbar neuritis of early childhood due to dental infections; the same may be said of many cases of strabismus. In adults, he considered retinal detachment as usually associated with dental infection. He divides dental infections into two classes: those due to *Streptococcus viridans,* which is found in periapical foci, and those due to the spirochete of pyorrhea. The former recede under sodium salicylate, and the latter under arsphenamin, mercury and bismuth. Dr. Jacqueau of Lyons called attention to a unilateral and localized macular edema of dental origin, which clears up on extraction of the offending tooth. Dr. Worms of Paris remarked that the eruption of wisdom teeth often induces affections of the eyelids, whereas other eye affections, such as keratitis, iritis and, especially, uveitis, had not been observed by him except in connection with alveolar or apical lesions affecting the premolars or the first two upper molars on the same side.

BUCHAREST

(From Our Regular Correspondent)

June 6, 1924.

Stamping Out Malaria in the Dobrudja

Professor Barbicescu has undertaken the task of stamping out malaria in the Dobrudja, a fertile nest of the malaria plasmodium. Dr. Barbicescu proposes commencing operations on the Black Sea side of the province, over an area of about 5,000 square miles, with a population of about 300,000. His scheme comprises the rendering mosquito-proof of all houses by means of wire gauze, and the withdrawal of their owners within the protected houses between sunset and sunrise. Those already suffering from the disease will be supplied gratuitously with quinin. A financier of Bucharest has generously offered to provide funds necessary. The rules of hygiene are to be enforced where necessary by the aid of the military, but interesting as is the experiment, some doubts are voiced in medical circles as to the success of a method that has to be enforced at the point of the bayonet. To educate this large population to the necessity for these drastic measures is a task from which the boldest might well shrink; moreover, years would be required before any method of instructing this ignorant populace could produce any tangible effect.

A Simple Remedy for Senile Pruritus

Dr. Francis Veress, lecturer on dermatology at the University of Cluj, writes that the troublesome itching to which many persons advanced in years are subject is a condition which so far has proved refractory to every kind of treatment, both external and internal. This failure to relieve has been explained on the assumption that the symptom is due to senile changes in the deeper layers of the skin or in the sensory nervous apparatus. Dr. Veress states, however, that the itching is almost invariably relieved by rubbing the skin over the pruriginous areas with a soft brush for from twenty to twenty-five minutes two or three times daily. After a few days, a single application of the brush before going to bed suffices to avert its recurrence. The brushing removes much epithelial débris, the presence of which is the cause of itching; but it is important to avoid the use of a hard brush, which is apt to intensify the cutaneous irritation. It is well to swab the surface, after brushing, with pure spirit or cologne water, allowing to dry by evaporation, and when this application is not well borne, to use hydrous wool fat or petrolatum. The treatment, of course, is not as radical as the application of roentgen rays, but it appears to provide the means for mitigating and controlling an otherwise intractable condition.

HOLLAND

(From Our Regular Correspondent)

May 31, 1924.

The Pathogenesis of Goiter

In 1918, the city of Utrecht appointed a goiter commission charged with the task of making experimental studies and collecting statistics with a view to determining the causes of the endemic goiter that prevails in Utrecht and the best therapeutic means of combating it. After several years devoted to research, this commission has published the results of its investigations. The inquiry considered the children of two groups of towns: (1) Utrecht and Breda, both known as endemic goiter centers, and (2) Leeuwarden and Middelburg, where thyroid enlargement is not so common. The figures obtained in these two sections are interesting. At Utrecht, of 100 boys 59 and of 100 girls 73 were found to have enlarged thyroid glands. At Breda, 75 per cent. of the boys and 94 per cent. of the girls were thus affected. At Leeuwarden, the figures were 21 per cent. for the boys and 49 per cent. for the girls; at Middelburg, 12 and 22 per cent., respectively.

The experimental studies consisted in taking a group of rats of the same origin (they were all brought from Amsterdam) and distributing them among the four cities, where they were subjected to the same conditions as to food, ventilation, habitation, etc. In each city the rats were divided into four groups. Each group was given different water, one receiving that used mainly in Utrecht, the second that of Breda, the third that of Leeuwarden and the fourth group the water of Middelburg. After six months the rats were killed, and the thyroid glands were painstakingly removed and weighed. Slight differences were noted on comparing with one another the four groups of rats experimented on in a given city, their condition depending, in a measure, at least, on the water they had received (the water from Breda seemed the most

goitrigenous). But the more significant finding was the fact that the rats kept in Utrecht and Breda showed the most serious hyperthyroidism, no matter which water had been given them. The commission concluded, therefore, that there must be some local and unknown factor that is even more important than the water in the causation of endemic goiter.

Self-Purification of Water

P. C. Flu has presented to the Royal Academy of Natural Sciences at Amsterdam some interesting results of his researches on the effect of the bacteriophage toward the purification of water. It was plainly evident that considerable quantities of typhoid bacilli and the vibriones of cholera may disappear from water in which there are no bacteriophages. In a water rich in antidysenteric bacteriophages, for example, the dysenteric bacilli did not disappear more rapidly than the other germs. Consequently, it is confirmed that bacteriophages do not influence (or, at the most, influence only slightly) the self-purification of water, in which process the protozoa doubtless play the principal part.

The Prevalence of Cancer

In comparing the statistics of the notified cases of cancer in Amsterdam in 1910 and 1922, Deelman found an increase of 9 per cent. in men and of 7.5 per cent. in women. There were 566 cases of esophageal cancer in men, as compared with 101 cases in women. The distribution of the cases of cancer of the stomach was: 2,288 cases in men and 2,079 in women.

Results of the Temperance Movement

The Verslagen en Mededeelingen betreffende de Volksgezondheid contain an interesting report of the inspector of public health, who is in charge of the campaign against alcoholism. The figures giving the total consumption of alcoholic beverages in the several provinces show an appreciable decrease except in the provinces of the South (Eindhoven and Limburg). It seems to be evident that the misuse of alcoholic beverages depends on the facilities offered for their consumption. The percentage of drinking places dispensing only nonalcoholic beverages amounts to but 2.5 per cent. in Limburg, northern Brabant and Zeeland; 5 per cent. in the provinces of Groningen and Drenthe; 8 per cent. in Gelderland and Friesland; 9 per cent. in the provinces of Utrecht and Overyssel; 20 per cent. in southern Holland, and 30 per cent. in northern Holland. The total consumption for the whole kingdom was 5.4 liters per person in 1913; 5.55 liters in 1914; 4.75 liters in 1917; 3.21 liters in 1918; 4.24 liters in 1919, and 5.15 liters in 1920.

Vital Statistics

The Bureau of Statistics has just published the complete statistical report for the year 1923. Although the birth rate (26 per thousand of population) and the percentage of newly married (8 per thousand of population) have remained essentially the same as for the years immediately preceding, the year 1923 shows a noteworthy decrease in the mortality rate. The figure is 9.9 per thousand inhabitants, a record which has never been previously attained and which is 1.5 lower than the rate for 1922. If one compares the figures of the preceding decades, he will be surprised to note that the mortality rate is but little more than a third of what it was in 1840 (26.6 per thousand).

The decrease in the infant mortality rate has been similar. Around 1880, the infant mortality rate was 190 per thousand living births. It reached the lowest figure in 1923: 56.9 per thousand, or 10.4 lower than that of 1922.

There has been a decrease also in the mortality from tuberculosis: 0.79 per thousand inhabitants as against 0.86 in 1922 and 1.37 in 1901.

PRAGUE

(From Our Regular Correspondent)

May 30, 1924.

The Antituberculosis League

The Masaryk League Against Tuberculosis issued its annual report at the annual meeting in Prague, May 17. The league bears the name of the founder of the Czechoslovak republic and its first president, and was organized immediately after the creation of the independent state in 1919. The annual report shows that the league has developed into a powerful organization for combating tuberculosis. It has at present 165 local branches in the republic, with a total membership of 28,200. The league intends to have ultimately a branch in every political district, and it has on its staff an organizing secretary for the province of Bohemia and another for the province of Moravia. The largest undertaking in which the league has cooperated was the National Congress Against Tuberculosis, held in Prague last year. The proceedings of this congress, published recently, are an impressive review of the scientific and organizational achievements in the field of tuberculosis in the Czechoslovak republic. During the year 1923-1924, the league continued to issue a series of publications for tuberculosis workers and the monthly bulletin of the Masaryk league. In the field of popular health education, the first tuberculosis film in the Czechoslovak republic has been prepared, and many illustrated lectures have been held and new popular pamphlets issued. The league has laid great emphasis on erecting tuberculosis dispensaries in connection with its local branches, and at present sixty-nine tuberculosis dispensaries are in operation. For the care of pretuberculous children, summer colonies have been established in thirty-four places, with 1,034 children in attendance. A department for occupational therapy and employment has been created in the headquarters. As there is no agency in the republic that pays for the care of indigent tuberculous patients in the sanatoriums or tuberculosis hospitals, the league had to take over this work in urgent cases. It has paid the hospital fees for 762 such patients, the treatment has been prolonged in 259 cases, and placement in a tuberculosis institution secured in 1,221 cases; in addition, local branches paid the hospital fees for 190 patients. The league is an active member of the National Council of Social Hygiene of the Czechoslovak republic. A Masaryk committee has been organized in connection with the New York Tuberculosis Association in New York City by Dr. J. Hulka, a former member of the executive committee of the league.

A Society for Eubiotics

Dr. Stanislav Ruzicka, professor of preventive medicine in Bratislava Medical School, has organized a Czechoslovak Society for Eubiotics. Professor Ruzicka has coined the name eubiotics for the science of healthy living in his recent booklet, which has been already translated into English, French and German. He points out the dangers of city life to the health of the people, and tries to modify their habits in such a way that their natural contact with Nature would not be lost. The purpose of the society is to cultivate among its members healthful living, and to advise them how to achieve health.

Treatment of Surgical Tuberculosis

Dr. V. Zahradnicky, associate professor of surgery of the Prague University, and chief surgeon of the general hospital at Nemecky Brod in Bohemia, has recently summarized his twenty-five years' experience in the treatment of surgical tuberculosis. He has had under his care 5,175 cases of surgical tuberculosis. While he originally favored radical methods in the treatment of surgical tuberculosis, he has changed his mind completely. In order to find out the opinion of his colleagues, he addressed a questionnaire to twenty-nine

Czechoslovak surgeons on the methods they used. Only two stated that they used radical methods; the majority used conservative methods, reserving the radical treatment for patients who are unable or unwilling to sacrifice the time required for conservative treatment. Dr. Zahradnicky is of the opinion that the attitude of surgeons toward this disease will continue in the same direction, and that ultimately only conservative methods will be adopted by surgeons even in places in which the climate is not as favorable as in Leysin and Berck. In his experience, similar results were obtained by the employment of artificial insolation.

BERLIN

(From Our Regular Correspondent)

June 7, 1924.

The Seventieth Birthday of Professor Rubner

June 2, Prof. Max Rubner, the physiologist and hygienist, of Berlin, celebrated his seventieth birthday. Born in Munich, Rubner in 1885 secured the chair of hygiene at the University of Marburg, and in 1891 he received a call to the University of Berlin, where he succeeded Robert Koch and continued to serve until two years ago, when he resigned because he had reached the age limit. In 1909, after the death of Professor Engelmann, Rubner assumed the chair of physiology at the University of Berlin, by which step he again took over the science in which he had first specialized and in which he has done his best work. Rubner studied in Leipzig under Ludwig, and in Munich under Voit. In his scientific achievements he has shown surprising versatility. Owing to his great interest in social welfare, he called attention to the practical application of his findings in connection with the nutrition of the masses. His book "Volksernährungsfragen" is written in an easy, popular style. During the World War, he was always ready to give the people the benefit of his great experience for the solution of difficult problems of nutrition. Another field of research to which Rubner devoted his time was the hygienic aspects of clothing. Other publications deal with the influence of natural vital conditions on heat production, metabolism and perspiration, sensible and insensible, in man; furthermore, the action of humidity, sunshine, cloudy weather, wind and bathing. He made researches also on the bacteria of water, metabolism of bacteria, and the action of various disinfection methods. As in questions of nutrition, he has always been ready to offer aid in the solution of the problems of social hygiene. On several occasions he placed the results of his investigations on the hygienic aspects of house building at the service of the promoters of housing reforms. He made intensive investigations of the smoke and soot evil and on forest preservation. Rubner is known not only as a scientific investigator but also as a talented and forceful speaker. Some of his addresses, for example, that on "Kraft und Stoff im Haushalt der Natur," which he delivered before the assembly of German scientists in Cologne, have found a widespread circulation. Since 1919, as the successor of Waldeyer, he has been the permanent secretary of the section on physics and mathematics of the Prussian Academy of Sciences.

Congress of the German Surgical Society

The congress of the Deutsche Gesellschaft für Chirurgie was held in Berlin, April 23-26. The main topic on the program of this year's surgical congress was "Surgery of the Thorax." Professor Sauerbruch of Munich, who, at the surgical congress held twenty years ago, had recommended the differential pressure procedure for surgical operations on the thorax, read the opening paper, in which he gave a survey of the progress of thoracic surgery during the last twenty years. He stated that the controversy between the adherents of the overpressure and the underpressure procedure had been settled. Both procedures have their respective advantages. For technical reasons, the overpressure procedure is preferred by most surgeons. But, in addition to improvements in technic, the improved diagnosis through roentgenography, pathologic experience gained through necropsies, and the more intimate collaboration between surgeons and internists, have brought about a distinct advance in surgery of the thorax. Lung embolism can be removed by the Trendelenburg operation. Surgery of the heart has made progress. Heart sutures still show a rather high mortality. The removal of foreign bodies (bullets, projectiles) from the heart is a grave intervention, which is justified only by imperative indications. On the other hand, heart disturbances due to displacement, whether through pressure on the large vessels or on the nerves innervating the heart or through the peculiar configuration of the thorax, as, for example, funnel breast, have yielded repeatedly to operative intervention. Furthermore, hemorrhages into the pericardium, which may be dangerous owing to compression of the right auricle or the large vessels, have been successfully treated by puncture or by pericardiotomy, which latter procedure may be undertaken also in the presence of purulent effusions. Chronic adhesive pericarditis can be treated by cardiolysis. The treatment of valvular lesions, however, is, with rare exceptions, still terra incognita. Likewise the surgery of the large trunk vessels has been advanced. Operations on the mediastinum have been successful. Mediastinal tumors may be removed. Surgery of the esophagus has made forward strides, to which the induced displacement into the thoracic cavity has contributed much. The elimination of impermeable strictures through plastic operations is now done quite generally; but the construction of an artificial esophagus should not be undertaken unless the indications are imperative. The value of esophagoscopy for the removal of foreign bodies from the esophagus should not be overemphasized. It has its limitations, and external esophagotomy must often be resorted to. In cardiospasm, the purely nervous type, in which operative intervention is contraindicated, must be carefully distinguished from the genuine type of spasm, in which the Heller method is the preferred operation.

In the management of cancer of the esophagus progress has been made, although the operative results are still disappointing. Sauerbruch succeeded in removing two diverticula of the esophagus that had perforated into the lungs. Surgery of the diaphragm has made advances, especially in the treatment of diaphragmatic hernia. Phrenicotomy is a valuable procedure. It may be recommended in all lung affections in which radical operative intervention is not to be considered. As for surgery of the pleura, the old rule that rib resection must be performed at once in the presence of purulent inflammation has been abandoned in the light of experience gained during the influenza epidemic. Numerous empyemas in children, as well as metapneumonic empyemas in adults, have been cured by puncture; likewise, posttraumatic suppurations. The types that occur with lung gangrene and are associated with pleural phlegmon should be opened up wide, in the same manner. Sauerbruch prefers, in metapneumonic empyema in adults, rib resection with the differential pressure procedure. He thinks that is better than Perthes' aspiration method. However, he admits that old empyemas, before they are subjected to such radical intervention as thoracoplasty, should be treated for some time by the Perthes aspiration method, which often results in a cure without further operative intervention. If, however, this method does not effect a cure, thoracoplasty becomes indicated and must be carried out in such a manner that no cavities of any kind remain. The treatment of tuberculous empyemas is especially difficult. Extrapleural plastic surgery and simultaneous puncture should be applied. Lung surgery

has made remarkable advances in the last twenty years. The operative removal of foreign bodies from the lungs does not present any very great difficulties, but should not be done except on imperative indications. Of seventy-one patients with lodged projectiles in the lungs, operated on by Sauerbruch, three died. Freund's chondrotomy in emphysema of the lungs has not fulfilled the first expectations; it has only limited indications. Bronchiectasis presents many difficulties; thoracoplasty is indicated if it is still compressible. If unilateral, resection of the pulmonary lobe concerned has sometimes given good results. Operative treatment of pulmonary tuberculosis is developing, and promises good results. The treatment of tuberculosis of the apex by the Freund method has not proved satisfactory, but resection of the first and second ribs, with the paravertebral incision, under local anesthesia, offers a good prognosis in the advanced, unilateral, fibrous and cavernous type (if possible, the one-stage operation should be employed and the two-stage intervention reserved for special definite indications). In a third of all unilateral cavernous cases, Sauerbruch believes, a cure can be effected which will extend over at least four years, so that expectoration will cease and the patients will be able again to take up their regular work. The primary mortality is under 1 per cent., but it reaches eventually 24 per cent. The fatal outcome is explainable, for the most part, by the fact that nice discrimination is lacking in the selection of cases; often there has been an unexpected spread of the infection to the other side, or the after-treatment has been inadequate—expectoration may have been insufficient, whereas this condition might have been relieved by full doses of morphin.

Sauerbruch referred to his series of 700 cases of thoracoplasty, in one third of which a complete arrest has been effected. Similar results have been reported by other operators. It is true that artificial pneumothorax is less dangerous, but thoracoplasty, he believes, is more reliable. He demands as the first requisite that the pleura shall be free from adhesions, which is rarely the case, and particularly rare in the cases that tend to clear up. It is irrational to try to break through the adhesions by sheer force; for that causes exudates to develop later which make a great deal of trouble and from which death results in from 15 to 20 per cent. of the cases. In closing, Sauerbruch expressed his disapproval of the operations proposed for angina pectoris: division of the sympathetic nerve or the depressor nerve. Nor does he think much good can be expected to result from the proposed division of the sympathetic nerve and the vagus nerve in the treatment of bronchial asthma. These methods, he believes, lack a physiologic foundation.

Following Sauerbruch's address, Professor Kirchner of Königsberg presented the first case of pulmonary embolism in which a cure was effected by the Trendelenburg operation. The patient was a woman, aged 38, in whom the embolism developed the third day after an operation for femoral hernia, just as she sat up for an examination of the lungs. Fifteen minutes after the onset of the embolism, the operation on the apparently moribund patient was begun. For forty-five seconds, the large vessels were closed off, during which brief space, after exposure and opening of the pericardium, the pulmonary artery was opened and blood clots extending a distance of 17 cm. were removed. The cured patient was presented to the assembly, and the chairman was fully justified in congratulating the operator and the aged originator of the operation, Professor Trendelenburg, who was in attendance. (The operation was described first in an article by Trendelenburg which appeared in the *Deutsche medizinische Wochenschrift.*)

During the discussion that followed, many physicians took exception to Sauerbruch's sharp criticism of artificial pneumothorax, which led the latter to explain that he, too, regarded artificial pneumothorax as a suitable procedure in many cases, but that he had warned against an exaggerated application of the method without due weighing of the indications for and against. Ulrici mentioned the difficulty of obliterating cavities in the apex, and stated that frequently they had to be plugged. He cited also a case in which Sauerbruch operated, pointing out that tubercle bacilli driven from such a cavity had set up a tuberculosis of the intestine, which proved fatal.

Kümmell of Hamburg sought, in his address on "The Etiology of Bronchial Asthma and Its Operative Treatment," to justify operative intervention. He made a sharp distinction between asthmatic affections due to psychic disturbances and the cases associated with organic changes of the nervous system. In the former, operative intervention is contraindicated and psychotherapy should be instituted. In a number of cases, macroscopic and histologic changes were found in the sympathetic nerve when removed at operation; such changes have been demonstrated also in other angioneuroses (macroscopically: swellings of the ganglions, hypertrophy and atrophy of the nerves; microscopically: fatty degeneration). Operation should be considered only in cases in which all other methods have failed and in which the patients have constant recourse to epinephrin preparations, which are capable of cutting short the attacks but whose injurious action on vessels and heart (hardening of the heart) is beginning to show. Sometimes the removal of the sympathetic nerve on one side is sufficient, which is in keeping with the experiences in peripheral sympathectomy. The peripheral portion, the stellate ganglion and possibly the first thoracic should be removed. Sometimes one can determine by blocking with procain through which side the attack is cut short. If the attacks return, the sympathetic nerve on the other side should also be removed. In three cases through unilateral and in four cases through bilateral resection, he accomplished cures lasting up to six months; he experienced one failure and one fatality. During the discussion, Kappis of Hanover emphasized that the same results can be secured through division of the sympathetic and the vagus nerves. Division of the vagus nerve, he has found, is a very simple operation which can be carried out from an incision over the clavicle. Favorable results from division of the sympathetic nerve in asthma have been reported also by Flörcken of Frankfort-on-the-Main, Kaess of Düsseldorf and Roepke of Barmen, while Brüning of Berlin witnessed no good results in three cases. In closing, Kümmell again uttered the warning that operation is justified only when the nerve is actually involved.

Marriages

WILLIAM ERNEST BALSINGER, Chicago, to Miss Charlotte Du Puis of Beauvais, France, at Los Angeles, June 17.

HENRY BARTHELL STEINBACH, Detroit, to Miss Edyth Bullis of Rochester, N. Y., at Grosse Point, Mich., June 3.

ARTHUR LLOYD HIGBEE, Boone, Iowa, to Miss Pleasant Harriet Fawcett of Springfield, Ill., recently.

VARNUM COCHRAN SOUTHWORTH, Monroe, Mich., to Miss Helen Dalzell McCorkle of Detroit, June 21.

JESSE JAMES HOLES, Battle Creek, Mich., to Miss Jessie Gibbons of Watseka, Ill., June 11.

EARL ANSELYN THAYER, Jackson, Mich., to Miss Evelyn MacGlinch of Bay City, June 21.

ALBERT S. FAULKNER, Waynestown, Ind., to Miss Stella Sheppard of Mellott, May 14.

AVERY ALA DRAKE to Miss Mary Genevieve Wilson, both of Laredo, Mo., in June.

GEORGE EDWIN CECIL to Mrs. Maud A. White, both of Flat River, Mo., June 17.

LLOYD E. LACEY, Rudd, Iowa, to Miss Dorothy Cave of Greene, April 19.

Deaths

Robert Williamson Lovett ✱ Boston; died suddenly, July 2, at the home of Sir Robert Jones at Liverpool, England. Dr. Lovett was born in Beverley, Mass., Nov. 18, 1859, and was graduated from the Medical School of Harvard University, Boston, 1885. During the epidemic of infantile paralysis in New York City in 1916, he was appointed consulting orthopedic surgeon to the New York State Department of Health. Since then he has been a member of the Harvard Infantile Paralysis Commission, which devotes itself to the study and treatment of the disease. In 1920, the University of Cincinnati conferred on him the honorary degree of doctor of science. For many years Dr. Lovett had served as professor of orthopedic surgery at his alma mater and on the staffs of several Boston hospitals. He was a member of the American, French, Italian and British orthopedic associations, the Boston Orthopedic Club and the Société Internationale de Chirugie. During the World War, Dr. Lovett was a major in the medical corps of the U. S. Army, and aided in the organization of orthopedic work. His numerous contributions to the growing specialty of orthopedic surgery were of great service in placing it on a firm scientific foundation. The books bearing his name include "The Treatment of Infantile Paralysis," "Lateral Curvature of the Spine and Round Shoulders" and with Sir Robert Jones, "Orthopedic Surgery."

Frank W. Westcott, Fanwood, N. J.; Jefferson Medical College of Philadelphia, 1880; member of the Medical Society of New Jersey; for thirty-eight years member, and at one time president, of the board of education; member of the board of health; formerly county physician; aged 75; died, June 24.

George Reuben S. Corson ✱ Pottsville, Pa.; Jefferson Medical College of Philadelphia, 1896; formerly assistant demonstrator of anatomy at his alma mater; on the staff of the Warne Hospital, where he died, June 4, of heart disease, following an operation for strangulated hernia, aged 56.

David Fletcher Lucas, Brooklyn; Medical Department of Columbia College, New York, 1880; member of the Medical Society of the State of New York; formerly on the staff of the Kings County Hospital; aged 76; died, June 16, at the Methodist Episcopal Hospital, of heart disease.

William Graeme Robertson, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1903; M.R.C.S., England, and L.R.C.P., London, 1905; surgeon to the White Star Liner *Baltic;* aged 45; died in June, at the Royal Infirmary, Liverpool, England.

William Fawcett Smith, Los Angeles; University of Dublin, Ireland, 1863; Civil War veteran; at one time secretary and superintendent of the Porto Rico Board of Health and for several years with General Gorgas in Panama; aged 82; died suddenly, June 23, of heart disease.

Fred J. McAllister, Hawarden, Iowa; State University of Iowa College of Medicine, Iowa City, 1902; member of the Iowa State Medical Society; served in the M. C., U. S. Army, in France, during the World War; aged 47; died, June 19, following a long illness.

Frederick Arthur Jefferson, Chicago; Rush Medical College, Chicago, 1895; formerly on the staff of the American Hospital and president of the Sheridan Park Hospital, now the John B. Murphy Hospital; aged 55; was found dead, July 2, from gas asphyxiation.

Samuel Cyrus Townsend, Paterson, N. J.; Bellevue Hospital Medical College, New York, 1879; member of the Medical Society of New Jersey; formerly member of the state board of health; aged 71; died, June 2, following a long illness.

Ralph Alexander Hamilton ✱ Washington, D. C.; Georgetown University School of Medicine, Washington, 1904; professor of bacteriology and pathology at his alma mater; aged 51; died, June 21, of a self-inflicted bullet wound.

Richard Powell Taylor ✱ Wilkes-Barre, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1892; formerly on the staff of the Mercy Hospital; aged 62; died, June 16, at the City Hospital, following an operation.

Charles E. Heartsill, Marshall, Texas; Medical Department of the Tulane University of Louisiana, New Orleans, 1893; member of the State Medical Association of Texas; aged 55; died in June, following a long illness.

Elias Fulp, Fulp, N. C.; Medical Department of the University of the City of New York, 1882; member of the Medical Society of the State of North Carolina; aged 65; died, June 17.

Haldor Sneve ✱ San Diego, Calif.; Medical College of Ohio, Cincinnati, 1887; for several years clinical professor of nervous and mental diseases at the University of Minnesota, Minneapolis; died, June 15; aged 58.

John Angus Gillis, Frederick, Okla.; University of Tennessee College of Medicine, Memphis, 1895; member of the Oklahoma State Medical Association; aged 58; died, June 19, at a hospital in Oklahoma City.

Joseph Kurtz, Los Angeles; University of California Medical School, San Francisco, 1872; formerly emeritus professor of orthopedic surgery at his alma mater; aged 82; died, June 20, of cerebral hemorrhage.

Louis Claude Wottring, Cincinnati; Eclectic Medical Institute, Cincinnati, 1899; formerly associate professor of clinical medicine at his alma mater; aged 48; died, June 22, of cerebral hemorrhage.

William Elijah Moore, Sioux Falls, S. D.; Medical College of Indiana, Indianapolis, 1881; Bellevue Hospital Medical College, New York, 1897; aged 71; died, June 22, of cerebral embolism.

Henry B. Beatty, Sandusky, Ohio; Cincinnati College of Medicine and Surgery, 1888; member of the Ohio State Medical Association; aged 62; died, June 19, following a long illness.

Charles F. Wilson, Memphis, Texas; University Medical College of Kansas City, Mo., 1891; member of the State Medical Association of Texas; aged 67; died, June 11.

Albert A. Mesch, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1909; member of the State Medical Society of Wisconsin; aged 41; died, June 23.

Eben Pratt Clapp, Pasadena, Calif.; Hahnemann Medical College and Hospital, Chicago, 1882; formerly a practitioner in Evanston, Ill.; aged 65; died recently.

James Thomas C. O'Donohoe, New York; Medical Department of the University of the City of New York, 1886; aged 64; died, May 21, of arteriosclerosis.

William B. Deffendall, Washington, Ind.; Kentucky School of Medicine, Louisville, 1891; aged 60; died, June 12, at the Daviess County Hospital, of uremia.

Robert B. Short ✱ Union Mills, Ind.; Medical College of Indiana, Indianapolis, 1881; formerly member of the state legislature; aged 72; died, June 22.

Joseph S. Howland, Plain City, Ohio; Starling Medical College, Columbus, 1887; Civil War veteran; aged 80; died suddenly, June 17, of heart disease.

James R. Murnan, Shelby, Miss.; University of Nashville (Tenn.) Medical Department, 1889; formerly mayor of Shelby; aged 57; died, June 18.

Jabez Frank Roughton, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1883; also a druggist; aged 70; died, June 11.

Charles Adam Federman, Kansas City, Mo.; Medical College of Ohio, Cincinnati, 1891; aged 54; died suddenly, May 31, of cerebral hemorrhage.

Leverett William Olin, Elmdale, Ind.; Medical Department of Columbia College, New York, 1880; aged 73; died, June 9, at Wingate, of carcinoma.

James T. Ward, Centerville, Tenn. (licensed, Tennessee, 1889); aged 69; died, June 15, following an operation for gangrene of the foot.

Thorwald Anda, Chicago; National Medical University, Chicago, 1896; aged 53; died, July 2, of septicemia, following a prostatotomy.

Brainard Alger Andrews, Revere, Mass.; College of Physicians and Surgeons, Boston, 1893; aged 65; died, June 8, of pneumonia.

William J. Ayling ✱ Syracuse, N. Y.; Syracuse University College of Medicine, 1882; aged 65; died, June 14.

Morris H. Block, New York; United States Medical College, New York, 1881; aged 71; died, June 10.

F. G. Hudson, Camden, Tenn. (licensed, Tennessee, 1889); Confederate veteran; aged 86; died, June 9.

Clarence M. Smith, Richland, Kan.; Eclectic Medical Institute, Cincinnati, 1885; aged 70; died, June 15, of heart disease.

Correction.—THE JOURNAL, May 10, p. 1563, noted the death of Dr. John Howard Cheever, Arlington, Mass., on the basis of information appearing in the *Journal-Lancet.* This Dr. Cheever is not dead. The John H. Cheever, who died in Los Angeles, was a former resident of St. Paul.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

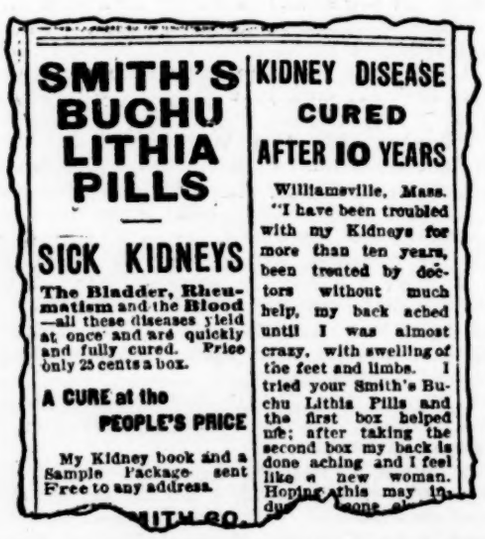
MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Smith's Buchu Lithia Pills.—Between August and October, 1923, several dozen boxes of "Smith's Buchu Lithia Pills" were shipped by C. F. Smith from Boston, Mass., to Portland, Maine. The Bureau of Chemistry analyzed samples of this preparation and reported that the product contained powdered licorice, extracts of plant drugs, including uva ursi (bear berry) and podophyllum, sodium, potassium, lithium and magnesium compounds, including nitrate and citrate, and soap. Some of the claims made on or in the trade package were:

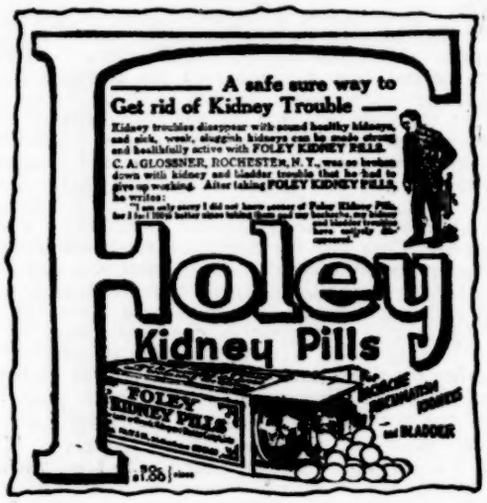
"They cure rheumatism, because they cure the kidneys."
"A specific for Rheumatism and all diseases of the Kidneys and Bladder."
"For Rheumatism And All Diseases Of The Kidneys, Blood And Urinary Organs. Bright's Disease, Congestion of the Kidneys, Bladder Troubles, Dropsical Swellings, Cystitis, Nephritis, Diabetes, Nervous Debility, Malaria, Gout, Neuralgia, Sciatica, etc."

These and similar claims were declared by the government officials to be false and fraudulent. In November, 1923, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12010; issued June 12, 1924.*]


SMITH'S BUCHU LITHIA PILLS
SICK KIDNEYS
The Bladder, Rheumatism and the Blood —all these diseases yield at once and are quickly and fully cured. Price only 25 cents a box.
A CURE at the PEOPLE'S PRICE
My Kidney book and a Sample Package sent Free to any address.
KIDNEY DISEASE CURED AFTER 10 YEARS
Williamsville, Mass.
"I have been troubled with my Kidneys for more than ten years, been treated by doctors without much help, my back ached until I was almost crazy, with swelling of the feet and limbs. I tried your Smith's Buchu Lithia Pills and the first box helped me; after taking the second box my back is done aching and I feel like a new woman. Hoping this may

Famous Mineral Wells Water.—A quantity of this water shipped by the Famous Mineral Wells Water Company of Mineral Wells, Texas, in October, 1918, was declared adulterated and misbranded by the federal authorities. Examination of samples by the Bureau of Chemistry was reported to have shown that the water was polluted and consisted in whole or in part of filthy and decomposed animal or vegetable substance. In addition to being adulterated, the government charged that it was misbranded because it was falsely and fraudulently represented as an effective cure for Bright's disease, diabetes, female complaint, rheumatism, stomach trouble and other conditions. In December, 1923, the company pleaded guilty and was fined $100 and costs.—[*Notice of Judgment No. 12020; issued June 12, 1924.*]

Foley's Kidney Pills.—A quantity of "Foley's Kidney Pills" were shipped by Foley & Co. from Chicago, Ill., into the State of Massachusetts in October, 1923. These pills were analyzed by the chemists of the Bureau of Chemistry who reported that they contained potassium nitrate, methylene blue, hexamethylene tetramine and plant material, including resin and juniper oil. These pills, although they contained kidney irritants, were recommended to people suffering from diseases of the kidneys. The claims, direct or implied, the federal authorities declared were false and fraudulent and



in December, 1923, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12018; issued June 12, 1924.*]

Irongland Tonic Tablets.—The Sanitary Products Co., San Francisco, Cal., shipped in April, 1923, a quantity of "Irongland Tonic Tablets" to Seattle. The Bureau of Chemistry analyzed this product and found it to consist of red-coated pills containing an iron compound and material of animal origin. Some of the claims made on or in the trade package for this product were:

"For the up-building of the Genital Organs of both Male and Female."
"Of Great Value in Restoring Youthful Vigor and Vitality to Weak, Rundown Nervous Men and Women."
"A Rejuvenating Tonic and Gland Builder."

These and similar claims were, of course, declared false and fraudulent. In October, 1923, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12045; issued June 12, 1924.*]

Remlock 300.—George E. Remick, who did business under the name Remlock Hills Laboratory, Denver, Colo., shipped in March, 1921, a quantity of "Remlock 300" which was misbranded. A sample of the stuff analyzed by the federal chemists showed it to consist of 99 per cent. water and 1 per cent. calcium hypochlorite, calcium chlorid and calcium carbonate. The stuff was falsely and fraudulently represented as an effective cure for diabetes and Bright's disease. In December, 1923, Remick pleaded guilty and was fined $100 and costs.—[*Notice of Judgment No. 12043; issued June 12, 1924.*] In 1910 "George E. Remick's Chemical Research Laboratory" of St. Louis, Mo., was exploiting: "Rheumatone—a cure for Rheumatism"; "Paralotone—a cure for Paralysis"; "Arteriotone—a cure for Hardened Arteries"; "Circlotone—restores Poor Circulation"; "Fibrotone—a cure for Nervousness" and "Senalotone—a cure for Premature Old Age." In 1912 "George E. Remick's Chemical Solvents," which were advertised as successful treatments for "Paralysis, Hardened Arteries, Blood Poverty, Chemical Deposits, Excess Uric Acid, Nervous Breakdown, Change of Life, Chronic Skin Eruptions," etc., were being exploited by "Remick's Institute and Laboratory" in Denver, Colorado. In 1913, "George E. Remick's Institute of Research" of Denver, Colorado, was advertising a line of cure-alls, and from the same address "Remick's Soil Supply Company" was advertising a "system of chemicalizing the soil," which would "force land to double

in its yield," and do a number of other marvelous things. Also, in 1913, G. E. Remick was sending out letters from St. Louis, Mo., calling attention to some wonderful medicines that were being put on the market by the "B. & O. Physicians Supply." In 1914, G. E. Remick was exploiting the "Remlock Treatments" from the Remlock Hills Lodge, of Denver, Colo. These treatments were alleged to be for "asthma and hay fever," but a number of the testimonials that were published dealt with the alleged cure of paralysis, hardened arteries, cystitis, diabetes, stomach trouble, and other conditions. In 1916 and 1917 George E. Remick, manager of the Remlock Hills Lodge and the Remlock Hills Laboratory of Kansas City, Mo., was advertising two nostrums; one, "Remlock 100" for asthma, and the other, "Remlock 200" for hay fever.

Trask's Ointment.—D. Ransom, Son & Co., Buffalo, N. Y., shipped in July, 1920, a quantity of "Trask's Ointment" which was misbranded. The Bureau of Chemistry reported that analysis of the product showed it to consist of extracts of plants, including tobacco and Lobelia, mixed with fat. It was falsely and fraudulently represented as an effective cure for catarrh, rheumatic affections, lumbago, neuralgia, nervous headache, eczema, sore eyes, goiter, piles, appendicitis and several other things, when, in truth and in fact, it was not. In March, 1923, the company entered a plea of *nolo contendere* and was fined $25.—[*Notice of Judgment No. 11978; issued May 12, 1924.*]

Tubbs White Pine Cough Cure.—The Tubbs Medicine Co., River Falls, Wis., shipped between February, 1921, and April, 1922, a quantity of "Tubbs White Pine Cough Cure" which was misbranded. The federal chemists reported that this product consisted essentially of pine tar, extract of a bark, chloroform, sugar, alcohol and water. The preparation was labeled in part: "For Croup, Whooping Cough and Relief in Consumptive Cases." These claims were declared false and fraudulent since the product contained no ingredients or combination of ingredients capable of producing the effects claimed. In July, 1922, judgment of condemnation and forfeiture was entered and the court ordered that the product be released to the company on payment of the costs of the proceedings and the execution of a bond of $200, conditioned in part that it be relabeled to the satisfaction of the Department of Agriculture.—[*Notice of Judgment No. 11871; issued March, 1924.*]

Correspondence

"ARTIFICIAL LIGHT THERAPY IN TUBERCULOSIS"

To the Editor:—Dr. Edgar Mayer, in an otherwise excellent article (THE JOURNAL, June 14), continually speaks of radiant energy of wave length shorter than 390 millimicrons as "light." Light is only an interpretation by the brain of stimulation received through the retina and optic nerves by wave lengths of radiant energy lying between 390 millimicrons and 770 millimicrons. Calling an "energy" by the name applied to a sensation is wrong physically and physiologically. The electromagnetic spectrum [which should be called the electromagnetic energium] "is of such a length," says Luckiesh, "that if the visible portion were a foot in length the invisible portion would be many million miles." Ultraviolet and infrared radiations are no more light than roentgen-ray or radio waves. Let us stop talking of invisible light and speak of radiant energy.

The misuse of terms in treatment by radiant energy, when various sources are utilized, such as solar energy, the mercury vapor arc, the carbon arc, the incandescent mazda or tungsten filament and the carbon filament, has led to confusion in understanding and a feeling among scientific men that radiant energy therapy borders on chicanery. It will, so long as the users thereof do not distinguish between visible and invisible radiant energy.

FRANK THOMAS WOODBURY, M.D., New York.

[The letter of Dr. Woodbury was referred to Dr. Edgar Mayer, who replies:]

It is most interesting that Dr. Woodbury should believe that the use of the term "ultraviolet energy" in place of "ultraviolet light" can help to overcome "a feeling among scientific men that radiant energy therapy borders on chicanery." It seems to us that the more we simplify and the less we act as "purists," the more readily shall we have the medical profession interesting itself in such a field as physics. The common, if not strictly scientific, conception of the light spectrum is that it consists of visible and invisible portions. The invisible ultraviolet wave-lengths are therefore regularly spoken of as invisible rays of light. A recent editorial in THE JOURNAL has specifically mentioned this. The term "light" is here used conveniently to distinguish it from the other fields of the electro-magnetic spectrum, such as the roentgen-ray and radio waves, and not to define a physiologic act. Strictly speaking, from the standpoint of physics, Dr. Woodbury is correct; and if he insists that we italicize the word light when we refer to ultraviolet wave-lengths, we gladly accept the suggestion.

EDGAR MAYER, M.D., Saranac Lake, N. Y.

"GUARDING AGAINST VIOLATION OF THE HARRISON ACT"

To the Editor:—I note with appreciation the warning in regard to prescription blanks (THE JOURNAL, June 14, p. 1984). The thing happened to me not very long ago and gave me an uncomfortable conversation with the office of the internal revenue inspector. I gave a patient a prescription blank in lieu of a card. She filled it in for a tube of quarter grain hypo tablets and signed my name. If she had not presented the prescription to a druggist familiar with my signature, she might have obtained the tablets. I now keep my prescription blanks locked up.

WALTER P. GUY, M.D., Los Angeles.

BARIUM SULPHATE MEALS IN GASTRIC DILATATION—HEATING SOLUTIONS FOR PROCTOCLYSIS

To the Editor:—I sent a patient suffering from a carcinoma of the stomach, with dilatation, achlorhydria and extreme cachexia to the hospital, June 18, for a roentgenogram. A meal of barium sulphate in malted milk was given, the plates were exposed and developed, and the patient removed to his home. About seven hours later, symptoms of distention ensued, followed by pain, nausea and vomiting, which in a few hours assumed the characteristics of hematemesis of a grave type. It occurs to me that this type of meal, universally used, is contraindicated in such cases, and that a different suspension should be used, i. e., olive oil or a light liquid petrolatum. In the event of either proving unsatisfactory, lavage should be a routine procedure if not contraindicated; otherwise, phenol (carbolic acid) in small doses (½-1 grain) should be given to prevent fermentation.

On palpating the abdomen of a patient who was receiving physiologic sodium chlorid and glucose solution by rectal

drip, heated by an electric immersion unit, I was surprised to feel a distinct current. On account of the fact that this may be utilized, if properly controlled, in certain atonic conditions, and also would prove dangerous in other cases in which increased peristalsis is not desired, I am calling attention to the dangers and possibilities of this method of heating solutions. At the same time I realize that by insulation (standing on a rubber mat) while examining or treating a patient, and a rubber sheet to prevent contact with the metal frame of the bed, this source of danger would be obviated.

H. T. SUMMERSGILL, M.D., Bennington, Vt.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WALTERHOFER TREATMENT OF PERNICIOUS ANEMIA

To the Editor:—Recently the widow of a former patient came in greatly perturbed, because she believed that apparently all had not been done to save her husband, who had died of addisonian (pernicious) anemia. The enclosed newspaper clipping was the cause of her added grief. She believed that (in addition to six whole blood transfusions) this procedure of "washing out the bone marrow" should have been done. Because of this incident, I believe that many more relatives of persons who died of addisonian anemia are heart-broken after reading such an article. Can you give me any information regarding this "Professor Walterhöfer," the "distinguished German surgeon," mentioned in the clipping? I am particularly interested in Addison's anemia and am desirous of learning about new therapeutic measures, but have not found this method in any recent literature.

RALPH A. KORDENAT, M.D., Chicago.

ANSWER.—The clipping referred to was a newspaper article by Dr. I. L. Nascher, whose sensational articles on medical topics appear regularly in Sunday papers, describing a method stated to have been devised by Professor Walterhöfer. Dr. Georg Walterhöfer has the title of extraordinary professor of internal medicine at the University of Berlin. The investigations were made at Goldscheider's and Bier's clinic. The operation consists in excochleation of the bone marrow of one or several long bones or in destruction of it by perfusion with a specially prepared salt solution. Walterhöfer and Schramm have published several papers. They publish only a few of the histories of their twenty-three patients, with diagrams of the red count and percentage of hemoglobin. Nothing is said about the morphologic findings in blood, and little about the patients' condition, so that the diagnosis is questionable in some cases.

Counting every patient who did not die almost immediately after the operation as a success, they claim remissions in 37 per cent. These remissions were, according to the authors, as good as one obtains with arsenic in beginning cases. Combination of the excochleation with other measures, such as arsenic treatment and blood transfusions, increased the percentage of remissions to 48 per cent. They claim that they tried the operation at first only in patients in whom all other methods had failed. It seems, however, that only arsenic was tried and that blood transfusions were used only in patients who had been operated on. The optimism of the authors is evident in the classification of the results: They regard, among others, as a success a patient who died after three months from a relapse, because they rejoiced at first in the improvement of his blood count. One of the patients operated on one and a half years ago is still living and working. It is not evident what disease he had, although such remissions are not uncommon in pernicious anemia.

General weakness, aspiration pneumonia and sepsis from the infected wound were the causes of death following in almost 50 per cent. of the patients almost immediately after the operation. Pernicious anemia seems to account for the death in the successful cases. The method must be regarded as in an early experimental stage and thus far not even promising. Following are references to the scientific articles of the German investigators:

Walterhöfer and Schramm: Treatment of Pernicious Anemia, *Arch. f. klin. Chir.* **118**: 794-811, 1921.
Walterhöfer and Schramm: Operative Treatment of Pernicious Anemia, *Arch. f. klin. Chir.* **125**: 407-413, 1922.
Walterhöfer and Schramm: Regeneration of Bone Marrow in Pernicious Anemia, *Arch. f. klin. Chir.* **119**: 766-773, 1922.
Walterhöfer and Schramm: Surgical Treatment of Pernicious Anemia, *Act. med. scand.* **60**: 196-210, 1924 (in German).

GOITER IN DYSTHYROIDISM

To the Editor:—What are the characteristics of exophthalmic goiter in dysthyroidism, as contrasted with the same condition in hyperthyroidism?

FRED E. CLOW, M.D., Wolfeboro, N. H.

ANSWER.—N. W. Janney (*Archives of Internal Medicine*, August, 1918) makes a careful distinction between the findings in exophthalmic goiter due to hyperthyroidism and those due to dysthyroidism. He says: "The symptoms of exophthalmic goiter may be divided into two groups: (1) toxic symptoms, (2) symptoms of thyroid deficiency. Group 1 contains most of the frequently occurring and striking phenomena; consequently, the significance of the second group has usually remained disregarded. Group 1 includes psychic stimulation, tremor, tachycardia, lability of the sympathetic nervous system, loss of weight and nitrogen, increased basal metabolism and tendency to rise of temperature. Group 2 includes goiter, cutaneous symptoms (atrophy, pigmentation, scleroma, brittleness and loss of hair, trophic nail changes), abnormal depositions of subcutaneous fat (rare), osseous changes (imperfect ossification and epiphyseal union), fatty degeneration, especially of the heart and somatic musculature, mononucleosis, and metabolic disturbances similar to or identical with those in hypothyroidism—delayed glucose assimilation, creatinuria, and growth disturbances in youthful cases. Certain symptoms, such as weakness, loss of weight and creatinuria, may properly be ascribed to either group."

The following references have a bearing on the subject:

Kay, W. E.: Study of One Hundred Cases Diagnosed as Hyperthyroidism, with Particular Reference to Differentiation, Symptomatology, Vegetative Nervous System, Basal Metabolism, and Sugar Tolerance and Kottmann Tests, THE JOURNAL, Dec. 23, 1922, p. 2149. (Gives hypothyroidism and hyperthyroidism, etc.)
Plummer, H. S.: Interrelationships of Function of Thyroid Gland, and of Its Active Agent, Thyroxin, in Tissues of Body, THE JOURNAL, July 23, 1921, p. 243. (This article touches on exophthalmic goiter not being necessarily hyperthyroid.)

TOXIN-ANTITOXIN

To the Editor:—1. Is toxin-antitoxin beyond the experimental stage? 2. Has its value been sufficiently proved? 3. Has it any detrimental temporary or permanent after-effects? 4. Is the present product put out by any reputable firm safe for administration? 5. How long has it been in use?

W. D. BRETZ, M.D., Huntingburg, Ind.

ANSWER.—1. Yes.

2. Yes. See Useful Drugs, Edition 6, page 101.

3. Occasionally, temporary after-effects have occurred, but these appear to have been due invariably to mixtures that were improperly prepared or that had been frozen before being used.

4. Any of the products now on sale and authorized by the United States Treasury Department may be considered safe for administration.

5. Toxin-antitoxin mixtures have been in use since 1914. The history of the preparation was discussed by Park, W. H.; Zingher, Abraham; and Serota, M. H.: Active Immunization in Diphtheria and Treatment by Toxin-Antitoxin, THE JOURNAL, Sept. 5, 1914, p. 859.

BROWN SPOTS ON SKIN

To the Editor:—I have a male patient of about 50 who has several irregular spots on the back of his neck, aggregating about half the size of the palm of the hand in area and medium brown, with sharp demarcation at the borders. The surrounding area is apparently devoid of the ordinary skin pigment, but is somewhat reddened, as if moderately inflamed. It is indurated, thickened and apparently slightly swollen and has been in this condition about two years. In hot weather, when exposed to the sun, the neck gets quite inflamed. The patient would like to have the spots removed for cosmetic reasons. The trouble followed an infection in both hands. This was the result of trauma during his work as shoemaker. At that time, he said, his hands were brown and "peeled off." Since then, the hands are rather light colored (devoid of pigment?) and also get inflamed on exposure to the sun in hot weather. Any suggestions will be appreciated.

A. C. H., M.D.

ANSWER.—The condition as described is indefinite and it is impossible to make any diagnosis. The most plausible suggestion would be that the patient has vitiligo. In this condition the surrounding skin is often hyperpigmented, and not infrequently the pigmented portions are looked on as the outstanding feature of the disease, and the depigmentation is apt to be disregarded. The lack of pigment on the backs of the hands, a favorite site for vitiligo, would also support this belief.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 2. Sec., Dr. Harry C. DeVighne, Juneau.
HAWAII: Honolulu, July 14-17. Sec., Dr. G. C. Milnor, 401 Beretania St., Honolulu.
MAINE: Augusta, July 15-16. Sec., Dr. Adam P. Leighton, Jr., 192 State St., Portland.
NEW MEXICO: Albuquerque, July 14. Sec., Dr. W. T. Joyner, Roswell.
PORTO RICO: San Juan, Sept. 2. Sec., Dr. D. Biascoechea, San Juan.
SOUTH DAKOTA: Sioux Falls, July 15. Director, Division of Medical Licensure, Dr. H. R. Kenaston, Bonesteel.

MEDICAL LICENSE INVESTIGATION IN CONNECTICUT

Report of State Referee Marcus H. Holcomb

As a result of the investigation carried on by the special grand jury, the Connecticut State Board of Health revoked the licenses of 175 physicians who were reported as having been illegally licensed by the Connecticut Eclectic Medical Examining Board. Five of these physicians entered appeals in the superior court protesting against such revocation, these being Arnold H. Brien, Bernard Kafka, Isidor Yochelman, Harry Chaimson and Gerald A. Richardson. The case was tried in May, 1924, in Hartford, Conn., before Judge Marcus H. Holcomb, who was appointed as state referee. Judge Holcomb made his report to the superior court, June 23, 1924. He recommended that the appeals of the five eclectic physicians be dismissed and that the state board of health be upheld "if the court finds that the petitioners were guilty of procuring their certificates of registration through fraud or if either of them has been convicted of felony." The recommendation forms part of a fifteen page review of the appeals and finding of facts which are abstracted as follows:

REASONS FOR REVOCATION OF LICENSES

The licenses of these petitioners were revoked by the commissioner of health along with others because he was requested to do so by the Connecticut Eclectic Medical Examining Board. This board acted after having been informed by the state's attorney that the special grand jury had evidence that the men named were guilty of fraud in obtaining their licenses and that the board was expected promptly to take the action necessary to have their licenses revoked. The revocation, therefore, was based on an investigation made not by the Eclectic Board, but by the special grand jury.

The referee's report states that, instead of presenting certificates of good moral character from two reputable citizens of the state, the certificates of the physicians who had appealed were signed by two persons who were not residents of the state. He also stated that the physicians had not presented evidence to show that they had completed the required nine months of premedical college work in physics, chemistry and biology.

FAILURE TO VERIFY CREDENTIALS

The report stated also that the Eclectic Board of Medical Examiners had made no attempt to verify the statements made by the petitioners in regard to their premedical or medical education, nor had the board investigated the particular school of practice taught by the medical schools from which the applicants came. The St. Louis College of Physicians and Surgeons was found to teach regular or allopathic medicine and was not an eclectic college. Although this college professed to require four years of instruction for graduation, nevertheless it frequently graduated students after only two years of attendance, and about 80 per cent. of its graduates came from other medical schools and attended this school one year or less. The report stated that this school "appears to have been the harbor for derelicts from the weakest medical schools in the country." Its graduates were reported as not recognized by the examining boards in forty-two states.

The graduates of the Kansas City College of Medicine and Surgery, of which Dr. Date Alexander is secretary and active manager, was said to be not recognized by the examining boards of forty-one states. The salaried teaching staff of this college, according to the report, was paid no more than $2,000 in the aggregate. Dr. Alexander had told the inspectors that he knew his school amounted to nothing, but that honorary degrees were what he was interested in and said, "I will keep my school going if I have only one student and have to pay him to stay here." He said that would exempt his property from taxation, and so long as he kept one student there he could continue to give horonary degrees, which was his chief business. Alexander said that two members of the Connecticut Eclectic Board were his graduates, and that in 1923, out of a total of sixty of his graduates, twenty-three were in practice in Connecticut.

FRAUDULENT CERTIFICATES OF HIGH SCHOOL CREDITS

William P. Sachs of St. Louis testified that, while he was the "Official Examiner for the State Superintendent of Public Instruction of Missouri," he had issued many certificates of high school work, including those issued to George M. Sutcliffe, Harry Thompson, Harry Chaimson, Ralph L. White, Morris Burstan, Rueben Adcox and James A. Christian. Sachs states that, during the years 1919 to 1923, inclusive, all certificates issued by him were fraudulent and that no applicant appeared before him to take examinations for the certificates. He said that he issued about 1,500 certificates each year, mostly at the solicitation of Dr. Adcox, for which he was paid $10 apiece, but for which Dr. Adcox received $50 each. Sachs further stated that Dr. Adcox and Dr. Voigt were in collusion with him in the issuing of the certificates, and that Dr. Adcox told him that Ralph L. White was "a big man in Connecticut on the state board of health."

ANTEDATES SUTCLIFFE'S DIPLOMA

George Maud Sutcliffe testified that he matriculated at the St. Louis College of Physicians and Surgeons in 1918, and was told by Dr. Waldo Briggs that he would have Sachs fix up his credits, and that Sachs fixed up his credits without any examination and charged him $25. Sutcliffe stated that he entered the freshman class in 1918, but that at the end of the first year Dr. Briggs advanced him to the junior class and that at the end of the junior year he was granted a diploma signed by the dean and the secretary of the college. He said he was planning to take the licensing examination in Colorado, but before going inquired of Dean Briggs in regard to securing a license in Missouri. Briggs is quoted as having said, "Well, in order to make sure that you get into Missouri I will issue a diploma for 1918." This was done since the Missouri board would not accept a graduate of the St. Louis College of Physicians and Surgeons after 1918. The date on the diploma issued to Sutcliffe, therefore, was about a month before the latter had ever seen the college. Sutcliffe stated that he went to Colorado, passed the examination in that state, and was licensed to practice in Connecticut by reciprocity.

Dr. Joseph H. Sintzel testified that he was secretary and registrar of the St. Louis College of Physicians and Surgeons in 1921 and 1922, and that he was still secretary of that school. He said that William P. Sachs had furnished about seventy-five preliminary certificates for students entering the St. Louis College of Physicians and Surgeons during the two years that he was secretary. He said he had refused to sign twenty diplomas in 1923 because he had never seen the men named in them. He said that about "four fifths of our graduates came to us from other colleges."

Harry Thompson Brundidge, the reporter of the St. Louis *Star*, testified that he had been assigned to investigate rumors that medical students were being granted diplomas without having earned them. Under the name of Harry Thompson he made the acquaintance of Dr. Adcox and Dr. Voigt, having claimed the occupation of a coal salesman. He said that between August and October, 1923, he had obtained from Adcox and Voigt a certificate of preliminary education issued by Sachs, a diploma of Doctor of Medicine of the National University of Arts and Sciences and a diploma from the Progressive College of Chiropractic of Chicago, and that for

these he had paid Adcox and Voigt more than $1,000. Brundidge stated that the house and office of Drs. Adcox and Voigt and Sachs were raided and that considerable material was found and taken, including a number of blank checks which had been paid and returned.

QUOTATIONS FROM STATE REFEREE'S REPORT

In his report Judge Holcomb said, "I find that the St. Louis College of Physicians and Surgeons, through Dr. Waldo Briggs issued many diplomas, which they termed adeundum degree diplomas, to nongraduates of the college for a charge of $225 each, that he continually graduated and granted diplomas to men who had not had more than two years' medical study, and that he received very many of the qualifying education certificates of said William H. Sachs as credits to applicants for admission, knowing them to have been fraudulently issued."

"I find that Dr. Waldo Briggs, Dr. Date Alexander, Dr. Adcox, Dr. Voigt, William H. Sachs and others, were severally and jointly interested in issuing fraudulent graduating and honorary degrees, diplomas and certificates for personal profit."

"The St. Louis College of Physicians and Surgeons and the Kansas City College of Medicine and Surgery are legally incorporated institutions, but not reputable medical colleges."

"The application of Isidor Yochelman states that he graduated at St. Louis College of Physicians and Surgeons, June 2, 1920, and that his freshman year was at the College of Physicians and Surgeons, Boston; but he does not state what medical school he attended, if any, during his sophomore and junior years, but states that the senior year 1919-1920 was at the St. Louis College of Physicians and Surgeons. That college year commenced in October or November, and ended in June, 1920, and I find on the uncontradicted testimony of the secretary of that college that said Yochelman did not attend said senior class before the last of February or the first of March, 1920."

"There were introduced in evidence the copies of two records of convictions of said Yochelman before the Superior Court of the Commonwealth of Massachusetts, the first conviction being for perjury in his application for examination for registration in medicine, and the second conviction being for the unlawful taking and using electricity manufactured and distributed by the Edison Company of Boston."

HIGH SCHOOL AND MEDICAL WORK IN SAME YEARS

"The application of Harry Chaimson states that he was graduated at St. Louis College of Physicians and Surgeons on May 18, 1921, and under the heading 'High School Diploma or Equivalent' he states North Eastern Prep School, Boston, 1916-1917-1918, and under the head 'Medical Education' he states his freshman year 1916-1917 was at the College of Physicians and Surgeons, Boston, and his sophomore year, 1917-1918, was at the Middlesex College of Medicine and Surgery. Thus it appears that during these two years of his attendance to obtain his high school education he was also attending medical colleges to obtain his medical education, which may appear to conflict with the provisions of the General Statutes of Connecticut that *before beginning* the study of medicine one must show that he was graduated from a high school or preparatory school whose standing shall be approved by said committee, or that his preliminary education is equivalent thereto."

"The application of Arnold H. Brien states that he attended the St. Louis College of Physicians and Surgeons during the four years 1917-1922, graduating at said college, June 6, 1922, and that three days later he graduated from Kansas City College of Medicine and Surgery, which apparently must have been an honorary degree. In his sworn affidavit, Brien states freshman medical year was at the New York Homeopathic Medical College and Flower Hospital, and that the sophomore, junior and senior years were at the St. Louis College of Physicians and Surgeons. Dr. Joseph H. Sintzel, the secretary of St. Louis College of Physicians and Surgeons, testified at said hearing that said Brien only attended said college during the years 1921-1922, and being uncontradicted, I find Dr. Sintzel's statement to be true."

DEGREES FROM TWO SCHOOLS IN SAME YEAR

"The evidence shows that eighteen men graduated from the St. Louis College of Physicians and Surgeons who received diplomas in the same year from the Kansas City College of Medicine and Surgery on which they were licensed in Connecticut. It also shows that three men graduated from the Boston College of Physicians and Surgeons, and in the same year received a diploma from the Kansas City College of Medicine and Surgery and on this diploma they were granted their medical licenses. A graduate of Middlesex College of Boston was granted a medical license in this state under the same circumstances."

"Dr. Date R. Alexander, secretary and owner of the Kansas City College of Medicine and Surgery, came to Connecticut in 1920, and passed the examinations held by the Connecticut Eclectic Medical Examining Board and said board granted him a license, but he has never called for it."

"Dr. Robert Adcox of St. Louis took the Eclectic Medical examination in 1921 and failed. The following year he took it again and passed, but has never claimed his license. The significant fact that appears on his application is that his certificate of moral character is signed by Dr. Waldo Briggs and Dr. Date R. Alexander."

GOT EXAMINATION QUESTIONS IN ADVANCE

"The members of the Connecticut Eclectic Medical Examining Board testified that all examination papers were collected immediately after the examination, and that nobody ever had access to them except the members of the board, but in the raid made by the police on the home of Dr. Robert Adcox in St. Louis, fifteen sets of examination questions made by the Connecticut Eclectic Medical Examining Board for the years 1922 and 1923 were found. Dr. Ralph Voigt, so Brundidge testified, told him that he (Voigt) and Adcox and Alexander had an arrangement with the medical board in Connecticut whereby they could get the examination papers in advance."

"The record shows that Dr. Date R. Alexander endorsed the moral character of 120 medical applications in this state; Robert P. Adcox endorsed the moral character of fifteen and that Alexander and Adcox in addition to the foregoing jointly endorsed the moral character of twelve applicants."

"It appeared from the evidence at this hearing that the Connecticut Eclectic Medical Examining Board has been the asylum for applicants to practice medicine who have graduated from discredited medical schools, which applications could not be received or considered by the medical examining boards in 90 per cent. of the States of the United States."

New Hampshire March Examination

Dr. Charles Duncan, secretary, New Hampshire State Board of Medical Registration, reports the written, oral and practical examination, held at Concord, March 13-14, 1924. The examination covered 12 subjects and included 120 questions. An average of 75 per cent. was required to pass. Two candidates were examined, both of whom passed. Four candidates were licensed by reciprocity. The following colleges were represented.

College	PASSED	Year Grad.	Per Cent.
Boston University		(1923)	79.4
Queen's University, Canada		(1915)	79.5

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Bowdoin Medical School		(1919)	Maine
Harvard University		(1917)	Mass.
Columbia University		(1921)	New York
University of Cincinnati		(1916)	Ohio

Connecticut March Homeopathic Medical Examination

Dr. E. C. M. Hall, secretary, Connecticut Homeopathic Medical Examining Board, reports that the following candidate was licensed by reciprocity at the meeting held at New Haven, March 11, 1924:

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
New York Homeo. Med. College and Flower Hospital		(1921)	New York

Book Notices

HEALTHY CHILDREN. A Volume Devoted to the Health of the Growing Child. By S. Josephine Baker, M.D., D.P.H., Director, Bureau of Child Hygiene, Department of Health, New York City. Cloth. Price, $1.25 net. Pp. 230, with 10 illustrations. Boston: Little, Brown & Co., 1923.

HEALTHY MOTHERS. A Volume Devoted to the Health of the Expectant Mother and the Care and Welfare of the Child. By S. Josephine Baker, M.D., D.P.H., Director, Bureau of Child Hygiene, Department of Health, New York City. Cloth. Price, $1.25 net. Pp. 187, with 11 illustrations. Boston: Little, Brown & Co., 1923.

HEALTHY BABIES. A Volume Devoted to the Health of the Expectant Mother and the Care and Welfare of the Child. By S. Josephine Baker, M.D., D.P.H., Director, Bureau of Child Hygiene, Department of Health, New York City. Cloth. Price, $1.25 net. Pp. 221, with 15 illustrations. Boston: Little, Brown & Co., 1923.

DIET AND CARE OF CHILDREN. Questions Mothers Ask the Doctor. By Harry S. Reynolds, M.D., Visiting Physician to Manchester Memorial Hospital. Cloth. Price, $1. Pp. 154. Chicago: Laird & Lee, 1924.

WHAT EVERY MOTHER SHOULD KNOW ABOUT HER INFANTS AND YOUNG CHILDREN. By Charles Gilmore Kerley, M.D., Consulting Pediatrist, Fifth Avenue Hospital. Second edition. Paper. Price, 50 cents. Pp. 103. New York: Paul B. Hoeber, 1924.

DIET FOR CHILDREN (AND ADULTS) AND THE KALORIE KIDS. By Lulu Hunt Peters, A.B., M.D., Pediatrician, Los Angeles County Hospital. Cloth. Price, $2. Pp. 313, with illustrations. New York: Dodd, Mead & Co., 1924.

The three volumes by Dr. S. Josephine Baker were copyrighted in 1920, although the printed date of publication is 1923. In general, the books are safe as to content, although giving no recognition whatever to modern views on the psychology of the child. Such difficulties of infancy as enuresis, thumb sucking and masturbation are considered wholly as physical conditions, although the author states that "the cause of many of these are habit, and possibly a nervous tendency on the part of the child." There are numerous directions as to medication from the family medicine chest, and in some instances perhaps beyond the limits of what would ordinarily be considered safe. The family medicine chest outlined by the author contains such substances as witch hazel, carron oil and tablets of calomel. Certainly these three are somewhat doubtful from the standpoint of home medication. Again, in the volume on the feeding of the baby, directions are given to treat loss of weight by replacing sucrose with some of the cereal proprietary foods, instead of suggesting any other methods of study or milk modification. The volume on the care of the expectant mother follows the general lines of such books without, however, being quite up to date.

The book by Dr. Harry S. Reynolds follows the general line of the volume by Holt on the care and feeding of the baby. The question and answer method is used, and there are good brief answers to practically all the questions that the mother may ask the physician. If there is any criticism to be made, it is in the inclusion of some questions and answers that could but infrequently occur to any layman. This author also provides a medicine cabinet for the home, including mercuric chlorid tablets in addition to calomel tablets. The mercuric chlorid tablets should certainly not be included in a home medicine chest. It is significant that under emergencies the author provides an outline of treatment for mercuric chlorid poisoning. He also suggests treatment for vomiting and earache, conditions that are better and more safely left to the physician. The book is quite up to date, and may in general be recommended.

The first edition of the Kerley book, "What Every Mother Should Know," appeared in 1915. It is a small pamphlet containing the minimal amount of necessary knowledge with blank pages for special notes. The information is safe and satisfactory.

The book by Dr. Lulu Hunt Peters, who is especially well known for her "Diet and Health, with Key to the Calories," is based largely on material worked up for her column "Diet and Health," which appears in many newspapers. Dr. Peters writes in colloquial style marked by frequent light and amusing allusions. The present volume contains all the facts relative to foods that a layman ought to know, and systems of memory are advised to aid the uninformed in keeping these facts clearly in mind. The diets and recipes represent the study of a large amount of material, and have been carefully selected. The latter chapters are somewhat extended by the use of testimonial letters which might better have been omitted, since they add nothing to the value of the text. The book is well printed and attractively bound and has an excellent index, a most important factor, in view of the large amount of material in the book.

DIE PFEILGIFTE. Nach eigenen toxikologischen und ethnologischen Untersuchungen. Von L. Lewin. Paper. Pp. 517, with 75 illustrations. Leipsic: Johann Ambrosius Barth, 1923.

Until this book appeared, there was no exhaustive, assembled work on the arrow poisons. The information was meager and widely scattered through the literature in various languages. Lewin has considered the traditions of savage and semicivilized tribes, has searched the historical records of ancient peoples who are known or are supposed to have used arrow poisons, and has critically reviewed the modern accounts relating to the subject. The result is a treatise that will probably remain the authority in the field for a generation. Most savage tribes of the present day make use of poisoned arrows in war, and some employ them for capturing game and fish. Nearly every severely toxic plant, and the secretions of the most venomous animals, have been used as arrow poisons. In this work the arrow poisons are considered by continents and their geographic subdivision groups, such as Borneo, India and the Malay peninsula. The poisons used by each tribe and the methods of their preparation, if known, are described. The chemistry of the toxic agents is given so far as is known, and the symptoms produced by the respective poisons are given briefly. In most instances the poisons are considered in relation to the families of plants or animals that produce them. Of plant families, the *Apocynaceae, Loganiaceae* and *Urticaceae* appear among those most often employed. Among animals, the venoms of the cobras and rattlesnakes are most frequently used. As a reference, this book should prove helpful to botanists, zoologists and toxicologists, and it should be particularly useful to medical missionaries and tropical explorers.

GOITRE. A contribution to the Study of the Pathology and Treatment of the Diseases of the Thyroid Gland. By F. de Quervain, Professor of Clinical Surgery in the University of Berne. Translated from the French by J. Snowman, M.D., M.R.C.P. Cloth. Price, $6. Pp. 247, with 118 illustrations. New York: William Wood & Co., 1924.

This presents the most important and latest views of the anatomy, physiology, diagnosis and treatment of diseases of the thyroid gland. It is a masterly translation of a similar work, recently published in French, by de Quervain, who succeeded to Kocher's chair of clinical surgery at the University of Berne. As would be expected, operative treatment is discussed at length and the excellent illustrations show the technic step by step. Hyperthyroidism and exophthalmic goiter, according to the author, constitute only 4 or 5 per cent. of the goiters found in the native Swiss population, and it is no doubt due to this fact that only twenty pages are devoted to the treatment of these types. Most of the surgery of exophthalmic goiter has been done in America, and it is disappointing not to find references to the really important contributions of American surgeons, the papers mentioned in the bibliography being by no means representative. The book can be recommended to every one interested in the study of goiter.

SELECTIONS FROM THE WORKS OF AMBROISE PARÉ. With Short Biography and Explanatory and Bibliographical Notes. By Dorothea Waley Singer. Medical Classics Series. Cloth. Price, $4. Pp. 246, with illustrations. New York: William Wood & Co., 1924.

Only a few years ago, Dr. Packard prepared an American book on Paré, an artistic analysis of the life of the famous surgeon, which included also the complete text of his most important work. Dorothea Singer, wife of the British medical historian Charles Singer, presents now a brief life of Paré, and follows with extensive extracts from Johnson's translation of the various books of the French surgeon. Particularly interesting are some of the aphorisms that were first published in 1575. For example: "Health is not received

by words, but by remedies fitly used." The same statement occurs in the work of Celsus. "Crying is good for an infant, for it serves instead of exercise." "Science without experience gets the physician no great credit with the patient." "Exercised bodies are less subject to disease."

FIFTY YEARS OF MEDICAL PROGRESS, 1873-1922. By H. Drinkwater, M.D., M.R.C.S., F.R.S.E. Cloth. Price, $4. Pp. 183, with 37 illustrations. New York: The Macmillan Company, 1924.

This volume represents an unusual compilation, which should be of great service to the student of the history of medicine. It is arranged in alphabetical order. The subject is followed by a chronological consideration of important contributions to it. For example, diabetes is considered under five dates: In 1874, Kussmaul discovered an excess of acetone in the blood in diabetic coma; in 1886, von Mering produced diabetes by administering phlorizin; in 1889, Mering and Minkowski produced diabetes by removing the pancreas; in 1906, Lusk showed that sugar may be produced from protein foodstuffs in diabetes; in 1922 occurred the work of Banting and Best. Each phase of medicine during the last fifty years is outlined as it developed. The book is a valuable and interesting reference work.

GRUNDRISS DER THEORETISCHEN BAKTERIOLOGIE. Von Dr. Phil. Traugott Baumgärtel, Privatdozent für Bakteriologie an der technischen Hochschule München. Paper. Price, $2.30. Pp. 259, with 3 illustrations. Berlin: Julius Springer, 1924.

This book gives a brief and reliable account of the principal experimental facts in regard to the structure and life of bacteria. It is intended to serve as an introduction to bacteriology for readers with some general knowledge and training in science. It is not as well suited for American students as might be desirable because it neglects too much the American work in general bacteriology.

Miscellany

PITUITARY EXTRACTS

"Studies on the Bio-Assay of Pituitary Extracts" by M. I. Smith and William T. McCloskey, appear in Hygienic Laboratory Bulletin 138, U. S. Public Health Service. The first article relates to the use of a desiccated and defatted infundibular powder as a standard in the physiologic evaluation of pituitary extracts. The authors state that they have elaborated a stable desiccated infundibular powder, of uniform potency, which may be used as a standard for the biologic assay of the extract. The method of assay, which makes use of the isolated uterus of the virgin guinea-pig, is described in detail. The activity of their standard powder in relation to fresh infundibular substance is given, showing that the powder represents the entire oxytocic and pressor activity of the fresh gland.

The authors further give the results of assay of nine commercial extracts, using their stable powder as a standard. In this they show that the commercial products vary in activity to the extent that the strongest extract examined was found to be eight times as strong as the weakest, thus emphasizing the need for a reliable standard.

The authors conclude by making the recommendation that, in order to insure a product of uniform activity, the manufacturers be required to make and standardize their extracts to represent the activity of 4 mg. of their standard powder (which is approximately equivalent to 30 mg. of fresh infundibular substance) per cubic centimeter. It is further suggested that the strength of the extract, as recommended, remain in force until properly conducted clinical observations with carefully standardized extracts make a change desirable.

The second paper deals with certain factors concerned in the deterioration of pituitary extracts. In this paper the authors report the results of their attempt to discover the factors that may be operative in causing loss of activity in extracts of the infundibular lobe of the pituitary gland. The effect of sterilization on the activity of the extract was investigated; the deteriorating action of heat and light during its storage was studied, and experiments were made also to determine the keeping qualities of frozen infundibular material, such as manufacturers generally use in the preparation of the commercial product.

It is shown that properly acidulated extracts may be sterilized by fractional sterilization at 100 C. without loss of activity, while autoclaving at 15 pounds pressure even for brief periods causes loss in activity. A carefully prepared and sterilized extract kept in the icebox was found to have retained its entire activity at the end of one year. Storage of the ampuled and sterilized extract at room temperature and in diffuse light for eight months had no appreciable effect on its activity. It was also found that the extract could withstand temperatures of 37 C. and even 45 C. without much loss in activity. At a temperature of 60 C., the extract was found to depreciate relatively rapidly in oxytocic and pressor activity alike.

Fresh infundibular material was shown to suffer no deterioration in activity when kept for two months at a temperature of from —10 to —17 C., while at 0 C. it could not be kept longer than two weeks without much loss in activity.

LORENZ HEISTER, SURGEON, 1683-1758

Lorenz Heister was born in 1683 in Frankfort-on-the-Main. His birthplace in the Old Town, Fischergasse 12, near the Frankfort cathedral, was fast falling into decay when a movement was started, some time ago, to rescue this interesting landmark of science from the gnawing tooth of time and restore it, before it should be too late, to its original condition. The work of restoration has now been accomplished, and it is in connection with this evidence of a healthy interest in the history of surgery and medicine in general that the *Zentralblatt für Chirurgie* (**51**:710 [April 5] 1924) publishes the address of Prof. Dr. V. Schmieden, delivered in Frankfort recently. On the front of the three-story house which was Heister's birthplace is his portrait, affixed in 1869 and bearing an inscription which designates him as the "greatest European surgeon of his time." His medical studies were begun in Giessen, but later he went to Holland, being attracted there by the opportunity, rare in those days, of studying anatomy and operative technic on the cadaver. He secured his doctor's degree in Harderwyk, Holland, and remained for a time in that country serving in the army medical department during several wars, and becoming distinguished for his brilliant operations in the field and in the military hospitals of Brussels. Throughout his whole career, he manifested great interest in the natural sciences, particularly anatomy and botany. He accumulated what was for that early period a large private library consisting of 6,000 volumes or more. He published many scientific works, chief among which was his Textbook of Surgery (Nuremberg, 1719). Before accepting a call to the chair of surgery in the University of Altorf (later combined with Erlangen), where he taught ten years, he had taken postgraduate work in Paris, Strasbourg and London, three great medical centers of his day. Schmieden says that Heister set for himself the task of writing a complete textbook of systematic surgery on an anatomic basis, with the definite hope of raising thereby the status of the true surgeon and destroying all connection with the quacks and mountebanks that overran the country at that time. He succeeded in producing a work which, in the clearness of its style, its scope, the arrangement of its subject matter and the mode of presentation, resembled closely a modern work on surgery. Much of his technic and many of his scientific conceptions are so modern that one would imagine they belonged to a much later epoch. It has happened again and again that "innovations" and "new inventions" have been published that are described in his work. Naturally, his surgery deals mainly with external operations, and he has no inkling of the present-day successes in operations on the organs of the large body cavities. He is unable to make a sharp distinction between malignant and benign tumors, or between true growths and inflammations. It is surprising to find, however, that he suspects that goiter is in some way

associated with the drinking water. The subject of obstetrics is well presented. The work may be regarded as the highest presentation of surgical technic, based on topographic anatomy instead of mere empiricism, that had appeared in Germany up to that time.

Medicolegal

Precaution Required in Care of Unconscious Persons

(Hale v. Atkins (Mo.), 256 S. W. R. 544)

The Springfield (Mo.) Court of Appeals says that the defendant was a physician who, in connection with his practice, ran a private hospital. His wife and an assistant attended to the hospital. They were not nurses, and the defendant did not employ graduate or regular nurses, and did not agree to furnish them to his patients who stayed in his hospital. He told the plaintiff, whom he received into the hospital to be operated on for appendicitis, that he ought to have a nurse, and ought to have another physician to assist in performing the operation, whereupon the plaintiff asked the defendant to procure the services of a physician from another place, and to get a graduate nurse from there. The plaintiff asked the designated physician to recommend a competent graduate nurse—whom the defendant saw and then took to his hospital. The evidence showed that the nurse was not furnished by the defendant, but that he exercised reasonable care in selecting her at the request of the plaintiff, and the court holds that, it being shown that the nurse was not an employee of the defendant, he could not be held for her negligence, if any. But it was the defendant's own act in placing the plaintiff, while unconscious, in a bed in which there was a hot water bottle that burned him, that the defendant was charged with. These facts were shown or admitted: Two hot water bottles were placed in the bed in which the plaintiff was laid; only one of them was taken out by the defendant when he placed the plaintiff in the bed; shortly thereafter the plaintiff was severely burned by a hot water bottle in the bed. This furnished the basis for an inference that one was left in the bed when the defendant placed the plaintiff there, and, if so, it certainly left it a question for the jury to say whether the defendant was negligent or not. True, the defendant testified that when he took out the one he saw on the bed there was no more left, and that when the plaintiff was placed in the bed it was entirely clear; but it was for the jury to decide whether the defendant's explanation exonerated him, and the jury evidently did not believe that the bottle which burned the plaintiff was removed from the bed when the defendant laid him down. Ordinary care requires that those intrusted with the care of unconscious persons shall take great precaution to see that no injury occurs. Under the evidence in this case, it should go to the jury to decide whether the defendant negligently placed the plaintiff in a bed in which there was a hot water bottle. However, the judgment for damages rendered in favor of the plaintiff must be reversed, and the cause remanded, because it was error to incorporate in an instruction to the jury the element of loss of time, since the evidence failed to show, with any degree of certainty, facts from which a jury could estimate the damages for loss of time.

Claim Agent's Promise of Payment for Treatment

(Vicksburg Infirmary v. Hines et al. (Miss.), 98 So. R. 530)

The Supreme Court of Mississippi, Division B, in reversing a judgment that was rendered in favor of a railroad company made defendant along with Hines, director general of railroads, says that the railroad company had hospital arrangements with a sanatorium for the treatment of its sick and injured employees, and deducted from the monthly pay of its employees a hospital fee. After one of the company's employees had become seriously ill and had been taken to the sanatorium by his foreman, his father went to see him and, being dissatisfied with the measures adopted for his relief, had him removed to the plaintiff infirmary. On or about the fourth day thereafter the claim agent of the railroad company visited the patient, and in the latter's presence told the physician in charge of the infirmary that the railroad company would pay the physician's bill and the hospital bill. He also instructed the physician to continue the treatment of the patient and to keep the nurses on his case, and that the railroad company would pay the bill. The physician testified to the effect that this claim agent looked after the sick and injured for the railroad company; that formerly the infirmary had been the railroad hospital; and that the claim agent was the one who usually had the railroad patients brought there. The railroad company contended that the oral agreement of the claim agent was not binding on the railroad because it was made without consideration; that it was void under the statute of frauds; and that it was not shown that the claim agent had authority to bind the railroad to pay the bill, a part of which had already been incurred when the promise was made. But the evidence was clear that the service to and treatment of the employee was continued for several weeks at the special request of the claim agent, and on his promise that the company would pay for the services already rendered, as well as for future services, and this constituted a sufficient consideration to support this action. The testimony in regard to the authority of the claim agent to bind the railroad company to pay for the services rendered to the employee was sufficient to require the submission of the cause to the jury, and, consequently, it was error to grant a motion to exclude this evidence and direct a verdict for the defendant. As there was no evidence that the debt here sued for was ever charged to the employee, but, on the contrary, it might be clearly inferred that it was not so charged, it did not come under the condemnation of the statute of frauds requiring promises to answer for the debts of others to be in writing. In other words, the court holds that where an employee of a railroad company is received into a hospital for medical treatment, and continued services are rendered to such employee, at the special request of an authorized agent of the railroad company, and on his promise that the company will pay for the services already rendered, as well as for future services, and there is no evidence that the bill for such services was charged originally to the employee, such promise or agreement is an original one, having a consideration, and it is not void under the statute of frauds.

Validity and Construction of Restriction as to Liquor

(Price v. Russell et al. (U. S.), 296 Fed. R. 263)

The United States District Court, in Ohio, says that the question here was: Has Congress, legislating under the Eighteenth Amendment, the power to limit the amount of intoxicating liquor or the alcoholic content thereof which a physician in good faith in the regular exercise of his profession deems necessary for a patient's internal use? Considering with great respect the reasoning of the District Court of Montana in *United States* v. *Freund*, 290 Fed. 411, and of the District Court for the Southern District of New York in *Lambert* v. *Yellowley*, 291 Fed. 640—courts of equal jurisdiction with this court—this court feels that the fullest consideration of the subject has not been given. Neither court seems to have noted the significance of the fact that the statute deals only with the distribution and use of intoxicating beverages, not with intoxicating liquors generally. This must be so from the very nature of the power to enact it granted by the amendment, which prohibits only the manufacturing and transporting of, and the trafficking in, beverage intoxicating liquor. There is no limitation on the prescription or administration of nonbeverage intoxicating liquor. The Pharmacopeia and the National Formulary, as well as common experience, instruct the physician in the compounding of a beverage intoxicating liquor with an ingredient, subject to his selection as innocuous in the specific case, which will deprive the result of palatability. Thus will his administration be taken beyond the scope of the law. This court sees nothing in the law which prevents resort to this expedient when alcoholic stimulant is indicated to the physician's judgment beyond the limitation of a half pint within ten days. This compounding may be done, as the profession knows, and

it is also known to intelligent laymen, without deterioration of the expected therapeutic effect of the administration, except in those rare and negligible cases in which the palate is to be tickled as part of the treatment, and these Congress seems to have provided for in Section 6, in which medical attention to such appetites is legislatively considered. This court sees no good reason, contemplating the course of decisions justifying restrictive legislation that the exercise of this police power might be effective, why Congress might not have legislated to prohibit the administration by physicians of beverage liquors altogether, requiring the use of such medication, innocuous in the specific instance, as would render the prescription unpalatable. It may be urged that this court's construction weakens the force of the restrictions, and consequently the act itself, as the weapon for the enforcement of the constitutional provision; but this court does not think so. The law remains fully efficacious to deal with the physician who seeks to evade the purpose of the amendment by affording a bibulous patient the means, even in what would ordinarily be considered a nonbeverage form, to gratify mere appetite. Any prescription containing more than one half of 1 per cent. of alcohol, and however nonbeverage as ordinarily considered, if given for beverage purposes, would constitute, manifestly, a violation of the law. The law as it stands is able to deal with evasions and subterfuges. Undoubtedly such exercise of professional bad faith would involve the physician and his patient in the joint commission of an offense against the United States, to which the law of conspiracy would apply.

Action Against City for Death from Smallpox

(City of Shawnee v. Jeter et al (Okla.), 221 Pac. R. 758)

The Supreme Court of Oklahoma, in reversing a judgment for $10,000 rendered against the city of Shawnee for the death of Mrs. Jeter, says that the record was not clear as to the exact date on which she became a patient in the general hospital maintained by the city, but it indicated that it was about the 10th or 12th of January, 1922, or a day or two later. Prior to that time, Mr. Jeter had been a patient of the hospital for several months, and she had visited him quite frequently. Some time in December, 1921, the city health officer put a man having smallpox into the isolation ward for contagious diseases that was located on the lower floor, in one corner of the hospital. January 18, Mrs. Jeter was removed to a detention hospital outside the city, where she died on the 22d, from smallpox. According to the testimony of a physician, she contracted the smallpox, not while she was a patient, but while she was a visitor at the hospital, or on or prior to January 7.

The court thinks that the courts are almost universal in holding that the care of persons affected with contagious diseases is a governmental function, and a municipal corporation is not liable in damages for the neglect of its officers in performing services in aid of that function. The health officer of the city, in placing the stranger affected with smallpox in the isolation ward of the hospital, was acting as the health officer of the city, and carrying out one of its governmental duties. But the acts of negligence on which the plaintiffs based their case were those of the matron or of persons working under her. It was contended that nurses were permitted to go in and out of the isolation ward and through the hospital, but in the opinion of the court there was no evidence to support that contention. Mr. Jeter testified to having seen one of the nurses from the isolation ward on the steps in the main building at a time when his wife was in a ward on the second floor. Taking that evidence as true, the nurse was in the hall at the time that Mrs. Jeter was developing the smallpox. If the nurse's act was one of negligence, and could be attributed to the hospital, and not to the health department, it could not have anything to do with Mrs. Jeter's contracting smallpox, because she already had it. In an action to recover for the death of a person alleged to have contracted a contagious disease by reason of the negligent acts of those in charge of a hospital, it is necessary that the acts of negligence complained of occurred at the approximate time the person was exposed to the contagious disease. When the acts of negligence relied on occurred, according to the evidence, after the person had contracted the disease, the evidence is insufficient to support a finding that the negligent acts complained of were the proximate cause of the injury.

The trial court should have advised the jury that the health officers, in removing the patient to the isolation ward of the hospital, were in the discharge of the governmental duties of the city, and no liability existed against the city, even if their acts were negligent. The court should also have distinguished between the duty the city owed to a patient in its hospital and the duty it owed to a visitor or a licensee, there being evidence in the record that Mrs. Jeter contracted the disease, not while a patient, but while a visitor.

Liability for Services of Physician and Hospital

(Harding v. Imperial Printing & Finishing Co. (R. I.), 123 Atl. R. 81)

The Supreme Court of Rhode Island says that the petitioner, an injured employee, paid $342.28 for medical and hospital services rendered to him during the first four weeks after the injury. He selected the physician by whom, and the hospital in which, he was treated; but neither the physician nor the hospital gave written notice to the employer within seven days after the beginning of their services that they had been so selected. However, the failure of the physician and the hospital to give notice of their employment to the employer in whose service the petitioner was injured, within seven days, did not bar the petitioner of the right to recover the sum of $342.28, it being found that the services were necessary and that the amount paid was a reasonable charge for the services. Section 5 of Article 2 of the workmen's compensation act of Rhode Island, as amended in 1917, reads:

> During the first four weeks after the injury, the employer shall furnish reasonable medical and hospital services and medicines when they are needed. The amount of the charge for such medical and hospital services shall be determined in case of the failure of the employer and employee or his physician to agree, by the superior court. The employee shall have the right to select the physician by whom, or the hospital in which, he desires to be treated, but the employer shall become liable to such physician or hospital for the reasonable fees for such treatment: Provided, however, that the physician or hospital shall give written notice to the employer within seven days after the beginning of their services that they have been so selected and shall present their claim to the employer for the payment of such services within three months after the conclusion thereof, but the failure of the employer to receive such notice shall not render the employee liable for such service.

The employer does not become directly liable to the physician or hospital unless notice is given and the claim is presented as provided by this section, but this court thinks it was the intention to permit the employee to recover after he had personally paid for the services. It is clear from the language of the section that the legislature contemplated a possible agreement between the employer and the employee as to the amount of the charge for such medical and hospital services. Why should the employee attempt to agree with the employer as to a charge for such services if the employee is not to be reimbursed after paying for the services? The requiring of the notice and presentation of claim is merely for the protection of the employer that he may not be required to pay twice for the same service.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Oto-Laryngology, Montreal, Canada, Sept. 15-20. Dr. Luther C. Peter, 1529 Spruce Street, Philadelphia, Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Cleveland, Sept. 18-20. Dr. James E. Davis, 111 Josephine Avenue, Detroit, Secretary.

American Electrotherapeutic Association, New York, Sept. 9-12. Dr. Richard Kovacs, 223 E. 68th Street, New York, Secretary.

Missouri Valley, Medical Society of the, Des Moines, Sept. 17-19. Dr. Charles W. Fassett, 115 E. 31st Street, Kansas City, Mo., Secretary.

North Dakota State Medical Association, Bismarck, Sept. 10-11. Dr. H. J. Rowe, 5211 Upton Avenue, S., Minneapolis, Minn., Secretary.

Wisconsin, State Medical Society of, Green Bay, Aug. 20-22. Mr. J. G. Crownhart, 588 Jefferson Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

33: 175-419 (May) 1924

Blood Supply of Enamel Organ in Developing Molar Teeth of Mammals. H. M. Kingery, Boulder, Colo.—p. 175.
*Relation Between Golgi Apparatus and Secretory Products. R. H. Bowen, New York.—p. 197.
*Obliteration of Lumen of Blood Vessels. IV. Origin and Nature of Mass Between Two Ligatures. J. P. Schaeffer and H. E. Radasch, Philadelphia.—p. 219.
Description of Larger Muscular Branches of Human Femoral Artery. H. D. Senior, New York.—p. 243.
Development of Reproductive Ducts and Canals in Free-Martin with Comparison of Normal. T. H. Bissonnette, Chicago.—p. 267.
*Nonnucleated Elements of Blood. II. Nonnucleated Erythrocytes or Erythroplastids in Nonmammalian Vertebrates. V. E. Emmel, Chicago.—p. 347.
Transplantation of Limb in Amblystoma. S. R. Detwiler, Boston.—p. 407.

Relation of Golgi Apparatus to Secretory Phenomena.—Bowen suggests a conception of the physiologic function of the Golgi complex. In the relation of the Golgi apparatus to secretory phenomena there is a distinct indication of its relation to processes of chemical synthesis in the cell, and from this it is only a step to the conception of the Golgi apparatus as a great intracellular center of chemical synthesis or enzyme formation.

Obliteration of Blood Vessel Lumen.—The study reported on by Schaeffer and Radasch indicates that in the obliteration of the lumen of the common carotid artery of the rabbit between two ligatures three processes may be operative: (1) thrombosis with secondary organization; (2) a ring-like thickening of the intima by the formation and continued growth of a subendothelial stratum; (3) a combination of these. Of these processes the thickening of the intima appears to be the most important factor in the series of arteries investigated.

Nonnucleated Elements of Blood.—Emmel's studies lead to the conclusion that the attainment of a maximal efficiency of the erythrocyte, in the form of nonnucleated elements, has, in the course of the hematologic evolution of vertebrates, taken place through the utilization of a process of cytoplasmic segmentation and the resultant formation of the nonnucleated, hemoglobin-containing erythrocyte or erythroplastid.

Annals of Otology, Rhinology and Laryngology, St. Louis

33: 305-656 (June) 1924

Bacterial Flora of Faucial Tonsils. H. H. Bell, St. Louis.—p. 305.
Multiple Abscesses of Brain Following Chronic Suppurative Otitis Media and Suppurative Labyrinthitis. G. M. Coates and E. A. Case, Philadelphia.—p. 335.
Corrective Rhinoplasty. L. Cohen, Baltimore.—p. 342.
Laryngectomy; Seventeen Cases. F. O. Lewis, Philadelphia.—p. 359.
Radical Operation for Extrinsic Carcinoma of Larynx. V. P. Blair, St. Louis.—p. 373.
Treatment of Ozena (Lautenschlaeger Operation). W. Mithoefer, Cincinnati.—p. 391.
*Mechanical and Chemical Properties of Sand Spur. Clinical Manifestations in Larynx. H. M. Taylor, Jacksonville, Fla.—p. 400.
Treatment of Nasal Fractures by Adustable Splint. S. Salinger, Chicago.—p. 413.
Methods and Interpretations of Fundamental Tests of Hearing. R. Sonnenschein, Chicago.—p. 423.
Accessory Nasal Sinus Infection with Asthma and Nontuberculous Chest Lesions. F. L. Dennis, Colorado Springs, Colo.—p. 451.
Quantitative Study of Hearing With and Without Cotton Plug Protheses in Middle Ear. H. I. Lillie, Rochester, Minn., and F. W. Kranz, Geneva, Ill.—p. 458.
Occurrence of Cartilage in Tonsil. P. Hillkowitz, Denver.—p. 473.
Orbital Infection Secondary to Ethmoiditis. D. A. Vanderhoof, Colorado Springs, Colo.—p. 481.
Acute Laryngeal Edema. C. F. Theisen, Albany.—p. 487.
Anaphylactic Adenitis Following Tonsillectomy. E. M. Josephson and S. Lustberg, New York.—p. 495.
Relation of Teeth to Other Parts of Body. K. H. Thoma, Boston.—p. 498.
Prevention of Mastoiditis by Treatment of Acute Otorrhea. O. Wolfe, Marshalltown, Ia.—p. 515.
Roentgen-Ray Treatment of Partial Deafness. H. Kahn, Chicago.—p. 523.
Submucous Resection of Nasal Septum in Children. F. W. White, New York.—p. 526.
Roentgen-Ray Therapy of Infected Hypertrophic Tonsil. E. S. Blaine, Chicago.—p. 534.
Epithelioma of Uvula; Case. H. Kahn, Chicago.—p. 541.

Sand Spur in Larynx.—Taylor discusses the sand spur as a foreign body in the larynx, and details the reaction of the laryngeal tissues to this type of foreign body. Eighty-five cases are reported in the literature to which the author adds ten. The endoscopic picture of those cases in which the foreign body had been in the larynx more than twenty-four hours, and the prolonged hoarseness after removal led him to endeavor to isolate some inherent property in the sand spur and suggested the study of its mechanical effect. An analytic survey of the cases in children in which the sand spur had been in the larynx for more than twenty-four hours presented a concrete picture in many respects resembling laryngeal diphtheria. The children were more or less prostrated and gave evidence of a toxemia. A marked hoarseness and increasing dyspnea were prominent symptoms and in some cases a varying amount of cyanosis was observed. Direct laryngoscopy showed a dirty grayish exudate elevated above the surrounding mucous membrane and the neighboring area to be inflamed and sometimes edematous. In a number of cases the foreign body was recognized with considerable difficulty, because it was obscured by this thick grayish membrane. Cultures from the exudate in no instance revealed more than a mixed infection. Second in importance to this clinical picture was the marked and prolonged hoarseness which persisted for weeks after the foreign body was removed. The explanation given for the findings in these cases is: The penetration and traumatization of the epithelium by the numerous spines of the sand spur lowers the resistance of the tissues and permits the invasion of pyogenic and other bacteria. The amount of reaction of the tissues is increased by the formates, which may act as a mechanical and toxichemical irritant. These formates are contained in the younger spines. The prolonged hoarseness after removal can be attributed largely to the fact that on removing the main portion of the numerous spines the retrose barbs are broken off and remain in the tissues of the larynx.

Archives of Dermatology and Syphilology, Chicago

9: 675-820 (June) 1924

Eponyms of Dermatology. H. Goodman, New York.—p. 675.
Precision in Dermatologic Roentgen-Ray Therapy. L. B. Kingery, Portland, Ore.—p. 738.
*Urticaria Pigmentosa in Adults Treated by Roentgen Ray. J. C. Michael, Houston, Tex.—p. 746.
*Treatment of Psoriasis with Intravenous Injections of Sodium Salicylate. E. R. Maloney, New York.—p. 752.

Roentgenotherapy for Urticaria Pigmentosa.—The results obtained by Michael in his case and in those recorded in the literature show that roentgenotherapy will cause involution of the lesions of the adult type of urticaria pigmentosa. In three out of four recorded cases, including the present one, this result was obtained. However, in the case reported by Michael, the effect was not permanent; after a year of freedom from the disease, new lesions are appearing in the areas previously subjected to the roentgen ray.

Sodium Salicylate in Psoriasis.—Intravenous injections of sodium salicylate have been strongly recommended in the treatment of psoriasis, and several cures have been reported. A trial of this method by Maloney in twenty cases proved disappointing, only slight benefit being derived and no cures obtained. He feels that the use of salicylic acid externally would probably be just as efficient as sodium salicylate intravenously.

Archives of Neurology and Psychiatry, Chicago

11: 621-748 (June) 1924

*Origin and Evolution of Cerebellum. C. J. Herrick, Chicago.—p. 621.
*Spinal Fluid Sugar. B. J. Alpers, C. J. Campbell and A. M. Prentiss, Boston.—p. 653.
*Relation Between Infantile Convulsions and Chronic Convulsive Disorders of Later Life. D. A. Thom, Boston.—p. 664.
Determining Mental Age During Physical Examination. D. M. Levy, Chicago.—p. 669.

Family Periodic Paralysis. J. Favill and C. F. Rennick, Chicago.—p. 674.
Morphologic Changes in Nerve Cells Following Injury to Axons. F. M. Nicholson, Chicago.—p. 680.
*Involuntary Movements: Association and Relation to Phenomena of Decerebrate Rigidity. S. Brock and I. S. Wechsler, New York.—p. 698.
*Tuberculous Meningitis. F. G. Ebaugh and C. A. Patten, Philadelphia.—p. 707.

Origin of Cerebellum.—This is a careful and exhaustive study made with the view of discovering what functional factors were primitively concerned in the initial differentiation of the cerebellum from preexisting bulbar structures and some of the steps by which additional functional systems of diverse kinds were drawn into the cerebellar complex. Some light may be shed on the great problems of the analysis of higher cerebellar functions. Herrick approaches the problem from the standpoint of comparative anatomy, embryology and physiology. The conclusions to be drawn from this study are that the cerebellum does not appear to participate in the analysis of sensory impressions for determining what the appropriate response shall be; but after the character of the response has been established, unconsciously in lower centers or consciously in the cerebral cortex, the cerebellum participates in the execution of the movements. Its own activities are wholly unconscious. The cerebellum function not merely as a chain reflex in response to proprioceptive reports of bodily movements after they have happened, but the primary sensorimotor centers (and especially the cerebral cortex) discharge collateral impulses into it, so that this adjustor can act in anticipation of the actual response and throw its own machinery into gear with all the lower motor apparatus necessary to execute it properly.

Spinal Fluid Sugar in Diseases of Nervous System.—A study of 421 spinal fluids by Alpers, Campbell and Prentiss represents sugar determinations in the normal person, in epidemic encephalitis, in general paresis (treated and untreated), in dementia praecox, in manic-depressive insanity and in various miscellaneous conditions. The normal range was found to be from 50 to 65 mg. per hundred cubic centimeters of spinal fluid. In epidemic encephalitis the average figure was 82 mg. per hundred cubic centimeters. In untreated general paresis the average was 65 mg. per hundred cubic centimeters. In cases of treated general paresis the average was 55.4 mg. per hundred cubic centimeters. In manic-depressive insanity the percentage was normal. The Benedict-Osterberg method for urine, as modified by the authors for spinal fluid, was used. This was controlled in each of the cases by a determination by the Folin-Wu sugar method.

Relation Between Infantile Convulsions and Those of Adults.—This report is represented by Thom as the initial step in what is to be an extended study. The problem is to determine not only the relation between infantile convulsions and the chronic convulsive disorders of later life, but also to ascertain which type of convulsions may be considered malignant and which, if any, may be benign. The material for this study was collected from three hospitals and consisted of 111 patients who had convulsions prior to the fourth year, not associated with any acute or chronic cerebral condition, such as encephalitic and meningitic processes, neoplasms, trauma and conditions due to lack of cerebral development. The cases considered were those in which the convulsions were associated with gastro-intestinal disturbances, acute infections, spasmophilia, pertussis, rickets, and also cases in which there was no associated disease or symptom complex, other than the convulsions. These cases were divided into two groups according to the subsequent findings; the first with probable brain damage and the second without evidence of brain damage. In the malignant group are included all cases in which the convulsions persisted until the time of death, and the living patients who are either having convulsions at the present time, or who are mentally deficient. In the benign group are placed those patients who have survived without evidence of brain damage. Sixty-two cases belond in the malignant group, while forty-seven belong to the second group. Twenty-four of the forty-two patients having convulsions associated with gastro-intestinal upsets belong to the brain damage group, of which four are dead, fifteen are living and having convulsions, and five are mentally deficient. Of twenty-nine cases in which a diagnosis of spasmophilia was made, sixteen belong to the malignant group. The type of nervous system that reacts with convulsions in the presence of some mild toxemia associated with gastro-intestinal upsets, is the type that needs protection from environmental situations. The individual must be steered so as to avoid many of the gales which the normal individual is quite capable of weathering. Thus convulsions may, perhaps, be considered as the criterion of the stability or instability of the nervous system.

Involuntary Movements and Decerebrate Phenomena.—Broch and Wechsler report four cases: (1) an instance of so-called double athetosis presenting choreiform, athetoid and dystonic movements, together with postural disturbance (a fragment of decerebrate rigidity); (2) a combination of choreiform, parkinsonian and tic-like movements following epidemic encephalitis, engrafted on which is a hysterical astasia-abasia; (3) an instance of a choreodystonic type of movement confined to the musculature of the right foot (three years have elapsed with no progress of the disorder); (4) a remarkable dyskinetic syndrome following epidemic encephalitis, belonging to the dystonia group, segmental in nature and limited to the head and neck musculature. The retracted head, opisthotonic back, pronated hand and equinus foot, form an exquisite example of decerebrate rigidity. In fact, the clinical picture is one of recurring waves of partial decerebration.

Tuberculous Meningitis with Psychoneurosis.—In the case reported by Ebaugh and Patten, there was an association of an apparent psychoneurotic reaction with active tuberculous infection of the nervous system. The disease ran a rapid course, the symptoms being ameliorated by cistern drainage. A focus of possible origin was found in the middle ear and mastoid.

Colorado Medicine, Denver

21: 153-192 (June) 1924

*Pitfalls in Diagnosis of Primary Carcinoma of Lung. I. D. Bronfin, Sanatorium.—p. 155.
Hay-Fever in Pueblo. J. G. Wolf, Pueblo.—p. 163.
Empyema. W. T. H. Baker, Pueblo.—p. 168.
Botulism at Sterling. J. E. Naugle, Sterling.—p. 175.
Choice of Anesthetic Agent and Most Suitable Method of Administration. L. R. Allen, Colorado Springs.—p. 182.
Instructing Diabetics. C. F. Kemper, Denver.—p. 184.

Primary Carcinoma of Lung: Errors in Diagnosis.—In each of the three cases cited by Bronfin, a diagnosis of pulmonary tuberculosis was made. The first patient had pulmonary symptoms for twenty-one years and nutrition was well maintained. In two cases there was a history of chronic pulmonary infection for a period of many years. One case simulated clinically a lung abscess or bronchiectasis and the other was mistaken clinically for pulmonary tuberculosis and roentgenologically for aortic aneurysm. In the case diagnosed as lung abscess, the only evidence in favor of malignancy was the serosanguinous fluid, blood streaked sputum, rapid cachexia and negative laboratory findings. In the last case cerebral symptoms were predominant. Dyspnea was not a marked feature even in a case with most extensive upper lobe carcinoma. The only constant symptom was deep dull pain in the chest without any evidence of local pleuritis. It is noteworthy that all our cases had the affection on the left side, although statistics show a greater preponderance of right sided disease. In all the three cases, physical signs elicited evidence of upper lobe fibrosis, so that pulmonary tuberculosis could not be excluded.

Journal of Biological Chemistry, Baltimore

60: 1-235 (May) 1924

Walden Inversion. II. Optical Rotation of Thiolactic and Corresponding α-Sulphopropionic Acids. P. A. Levene and L. A. Mikeska, New York.—p. 1.
*Growth and Reproduction on Simplified Food Supply. IV. Improvement in Nutrition Resulting from Increased Proportion of Milk in Diet. H. C. Sherman and H. L. Campbell, New York.—p. 5.
*Mechanism of Acidosis in Anesthesia. R. L. Stehle and W. Bourne, Montreal.—p. 1.
Preparation of Insulin. M. Somogyi, E. A. Doisy and P. A. Shaffer, St. Louis.—p. 31.

Formation of Ethereal Sulphates. G. J. Shiple, J. A. Muldoon and C. P. Sherwin, New York.—p. 59.
*Glycolysis in Bloods of Normal Subjects and of Diabetic Patients. E. Tolstoi, New York.—p. 69.
Extension of Van Slyke Table of Factors for Conversion of Nitrogen Gas Into Milligrams of Amino Nitrogen. P. F. Sharp, Bozeman, Mont.—p. 77.
Ratio of Carbon Dioxid to Heat Production in Cattle. W. W. Braman, State College, Pa.—p. 79.
Gas and Electrolyte Equilibria in Blood. VI. Acid Properties of Reduced and Oxygenated Hemoglobin. A. B. Hastings, D. D. Van Slyke, J. M. Neill, M. Heidelberger and C. R. Harington, New York. —p. 89.
Chemistry of Pyrimidines. VI. New Color Tests for Uracil and Cytosine. O. Baudisch, New York.—p. 155.
Two Isomeric Tetramethyl Mannonolactones. P. A. Levene and G. M. Meyer, New York.—p. 167.
Structure of Diacetone Glucose. II. 2-Methyl Glucuronic Acid and 4-Methyl Glucoheptonic Lactone. P. A. Levene and G. M. Meyer, New York.—p. 173.
Synthesis of Hydroxy Amins by Curtius Method. P. A. Levene and J. Scheidegger, New York.—p. 179.
Isolation of Arachidonic Acid from Brain Tissue. L. G. Wesson, Baltimore.—p. 183.
Technic of Heart Puncture in Dog. E. W. Schultz, Stanford University, Calif.—p. 189.
Thermodynamic Relations of Oxygen and Base Combining Properties of Blood. W. C. Stadie and K. A. Martin, New Haven, Conn.—p. 191.

Milk Diet Supports Growth and Reproduction.—Starting with a diet which was shown to be adequate in that it supported growth, reproduction, and successful suckling of the young for generation after generation, Sherman and Campbell found that an increase in the proportion of milk in this already adequate diet resulted in evidences of improved nutrition.

Mechanism of Acidosis in Anesthesia.—Data are presented by Stehle and Bourne which indicate that the excess of base excreted after a period of ether anesthesia is accompanied by an approximately equivalent quantity of phosphoric acid. The phosphoric acid appears to leave the muscles during the anesthesia and to sojourn in the liver until the reassumption of kidney function after the recovery of the animal when it is redistributed and partially excreted. When morphin is administered as a preliminary to etherization a marked excretion of phosphorus occurs as soon as the ether is begun. This is attributed to an action of the morphin on the liver which renders it incapable of retaining phosphorus. It is suggested that the low alkali reserve and increased acidity of the blood in ether anesthesia is due to the discharge of phosphoric acid from the muscles.

Glycolytic Power of Blood.—The glycolytic power of eight normal subjects and eleven diabetic patients was studied by Tolstoi. No diminution of the glycolytic power of diabetic bloods was found when compared with that of normals when the bloods were kept at 37 C. It was found that at room temperature the glycolytic rates were definitely diminished in both types of blood. Bacterial contamination did not affect the results in the experimental period of twenty-four hours.

Journal of Industrial Hygiene, Boston

6: 45-80 (June) 1924

Use of Pneumococcal Vaccine. S. Lister.—p. 45.
Laboratories of Ventilation and Illumination, Harvard School of Public Health. P. Drinker, Boston.—p. 57.
*Occupational Stigma on Breast of Shoemakers. M. Oppenheim, Vienna, Austria.—p. 67.
Hygiene of Pulp and Paper Industry. F. G. Pedley.—p. 70.

Occupational Stigma on Shoemaker's Breast.—A pathologic change in the skin of shoemakers, which has not yet been described in literature, is recorded by Oppenheim. In the sternal region of the breast, usually in the line connecting the two mamillae and bordered laterally by the insertion of the pectoral muscles, there is often a somewhat darkly pigmented zone of the skin extending a hand's breadth above and below the line. This zone shows comedones—sometimes only a few, sometimes so many that not one follicle is left free. The comedones are either punctiform or of considerable size, and sometimes occur in groups of two and three. In some cases small brown or black prickles, from 1 to 2 mm. long (*Lichen spinulosus* or *Trichostasis spinulosa*), are lodged in the orifices of the follicles. Many cases do not show any other changes. There are, however, cases showing inflammatory changes, such as occur in acne vulgaris. Then there are present folliculitis, perifolliculitis with pustule formation and scars, and also milia and irritation of the sebaceous glands. But these changes in the sebaceous glands are usually not very prominent, and hyperkeratotic processes, such as belong to the picture of "pitch skin" are either entirely absent or barely suggested. The author believes that this is, to a certain extent, an abortive, circumscribed form of pitch skin closely connected with the shoemaker's occupation, and not with alterations of the skin due to seborrhea and acne vulgaris. This is proved by these facts: (*a*) that the condition often remains exclusively limited to the skin area described above, the face and neck never showing a trace of acne vulgaris; (*b*) that this affected area of skin in cases of coexisting acne vulgaris exhibits a much more marked formation of comedones than the skin in the immediate vicinity, and (*c*) that this particular area in other workmen and artisans, even if they are suffering from seborrhea and acne, is usually not more severely attacked by acne lesions than is in keeping with the disease elsewhere (the areas of the skin lying over the sternum, forming the anterior sweat channel, are usually involved in acne). The causes of these skin alterations are the use of pitch and the way in which a shoemaker works. As a rule, he plies his trade dressed in his leather apron, in shirt sleeves, with his breast uncovered. He sits on a low stool and presses the shoe against the middle of his breast. The leather apron, soiled with pitch, rubs and presses the skin of the sternal region below the mamillary line in the very place where, in the case of rickets, shoemakers' or infundibular breast develops. This accounts for the local "pitch skin," which varies in intensity according to the degree of predisposition to seborrhea.

Journal of Infectious Diseases, Chicago

34: 549-648 (June) 1924

*Tuberculosis of Mammalian Tissue in Vitro. A. A. Maximow, Chicago —p. 549.
*Medium for Inhibition of Spreaders and Differentiation of Bacillus Coli and Bacillus Aerogenes. C. E. Skinner and T. J. Murray, New Brunswick, N. J.—p. 585.
*Destruction of Uric Acid by Bacteria and Molds. J. L. Morris and E. E. Ecker, Cleveland.—p. 592.
*Bacteriology of Urine in Nephritis and Experimental Bacterial Nephritis. W. E. Cary, Chicago.—p. 599.
*Trypanosomiasis in Camels: Detection by Complement Fixation. H. W. Schoening, Washington, D. C.—p. 608.
*Action of Leukocytes and of Brain Tissue on Toxin of Bacillus Botulinus. G. E. Coleman, Santa Barbara, Calif.—p. 614.
*Relation of Reaction of Intestinal Contents to Diet and Flora. N. P. Hudson and L. W. Parr, Chicago.—p. 621.
*Complement in Serum of Diabetic and Uremic Patients. R. Rockwood and C. Beeler, Rochester, Minn.—p. 625.
Production of Mycelial Forms by Oidium Albicans in Carrot Infusion. A. A. Draper, Cincinnati.—p. 631.
Colloidal Inhibition of Anaphylactic Shock. H. T. Karsber and E. E. Ecker, Cleveland.—p. 636.

Reproduction of Tuberculosis in Tissue Cultures.—Maximow communicates the results of his investigations on the simultaneous cultivation of mammalian tissues and tubercle bacilli in vitro. The object of the research was purely morphologic—Maximow tried to reproduce in vitro, if possible, the characteristic pathologic picture of the tuberculous process, as it is found in the infected organism. The method of tissue culture used made it possible to duplicate the essential phases of the tuberculous process under artificial conditions. The histogenesis of the lesions can be followed in living condition as well as in fixed and stained preparations in all its details and stages and elucidates the origin of all the specific elements.

Culture Medium for Differentiation of B. Coli and B. Aerogenes.—The medium as modified by Skinner and Murray is termed triple dye agar and is the standard eosin methylene blue agar of Levine to which 1 c.c. of a 0.1 per cent. (aqueous) solution of crystal violet is added per hundred cubic centimeters of medium at the time the other dyes are added. The addition of this amount of dye to the standard agar is said not to make the identification or isolation of the colon bacilli more difficult. On the contrary, the colonies are even more typical than on the standard agar.

Destruction of Uric Acid by Bacteria and Molds.—Observations by one of the authors after ingestion of uric acid indicated destruction of considerable quantities of that sub-

stance in the alimentary tract. After ingestion of 1 gm. of uric acid only one-fourth of that amount was present in the feces. Analyses of blood and urine gave no evidence that the missing quantity had been absorbed. Similar results were secured on feeding uric acid to a dog. Various bacteria were studied by Morris and Ecker to determine their capacity for utilization of uric acid, usual uric acid standard solution being employed. Variations in phosphate and acetate used as solvents indicated that further modifications in medium would affect utilization. The uric acid bacterium of Ulpiani was isolated and quantitatively studied. Its power to destroy uric acid was not found to be due to uricase. Several of a series of pathogenic molds definitely utilized uric acid though at a slower rate. Under the conditions of simple mediums *Epidermophyton inguinale*, *Mastigocladium blochi*, a nail *Blastomyces*, *Achorion violaceum* and *Sprotrichum schenkii* destroyed uric acid. Further investigations with more complicated mediums are in progress.

Bacteriology of Urine in Nephritis.—Cary's report covers twenty-nine cases, twenty of which were chronic and nine acute. In a large proportion of cases the urine was obtained by means of a sterile catheter. In only five cases were cultures of streptococci obtained. In ten cases, a feebly gram-positive organism was found. In five cases a spore-bearing organism was present. Other organisms found were *Staphylococcus aureus*, six times, and anaerobic *S. aureus*, two times, *A. albus*, once, *Bacillus coli*, three times, and *Diplococcus crassus*, once. Two specimens only were sterile. Cary states that acute nephritis may be produced by the intravenous injection in rabbits of suitable doses of several varieties of bacteria. Chronic nephritis in rabbits may be produced by repeated injections of bacteria but the changes in the kidney are never as striking as those seen in man.

Complement Fixation Test for Trypanosomiasis.—Schoening states that the discovery of trypanosomias in camels emphasizes the value of the complement fixation test as a means of guarding against the introduction of trypanosome disease into a country.

Experiments on Toxicity of B. Botulinus.—Intramuscular injections of peptone subsequent to subcutaneous injection into guinea-pigs of botulinus toxin were found by Coleman to have no therapeutic effect and to hasten the death of the animals. Living leukocytes of the normal guinea-pig increase in vitro the toxicity of filtered cultures of *Bacillus botulinus*. The action of botulinus toxin is delayed when injected into the peritoneal cavity of guinea-pigs in which an exudate rich in leukocytes has been produced by the injection of peptone. The brain tissue of rabbits does not absorb botulinus toxin.

Effect of Diet on Intestinal Flora.—Hudson and Parr found that a diet containing sufficient carbohydrate to effect a complete turnover from a heterogeneous, gram-negative type of flora in rats fed on high protein and stock diets, to a flora markedly simplified and gram-positive, induced coincidently a change in the hydrogen ion concentration from nearly neutral to distinctly acid. In rats fed on a high carbohydrate diet, this acid environment was much more marked in the cecum than in the colon. In the same animals, however, even the contents of the descending colon were more acid than those of the rats fed on high protein or stock diets. Intestinal spirochetes were found in a larger number of rats on high protein and stock diets, and in the cecum of these rats to a greater degree than in the descending colon, coincident with putrefaction and less acidity.

Serum Complement Content in Diabetes and Uremia.—Forty-eight patients with diabetes and nine with severe uremia who were the subjects of investigation by Rockwood and Beeler showed no significant variation in the complement content of their serum.

Journal of Radiology, Omaha

4: 147-181 (May) 1924

*Physiotherapy of Roentgen-Ray Burns. R. W. Fouts, Omaha.—p. 147.
Surgical Treatment of Roentgen-Ray Burns. E. G. Blair, Kansas City, Mo.—p. 149.
Interpretation of Shadow Alterations. W. A. Lurie, New Orleans.—p. 152.
Unfiltered and Filtered Roentgen-Ray Dosage. A. Bachem, Chicago.—p. 155.
Preoperative Roentgen-Ray Treatment of Malignancy. C. H. Ballard, Omaha.—p. 156.
Roentgen-Ray Treatment of Uterine Fibroids. A. L. Yocom, Chariton, Ia.—p. 158.
Treatment of Chronic Prostatitis by Electrotherapy. W. B. Chapman, Carthage, Mo.—p. 160.
Deep Roentgen-Ray Therapy in Diseases of Female Pelvis. N. B. Newcomer, E. Newcomer and C. A. Conyers, Denver.—p. 161.

Physiotherapy of Roentgen-Ray Burns.—In a case of extensive ulcer of the back causing intense pain, the incandescent light was used by Fouts. In the beginning it was applied daily for from twenty to thirty minutes. The actinic ray (air cooled) was used to maintain a prolonged or almost continuous hyperemia of the surrounding skin for several inches outside the ulcer. Daily treatments of short exposures of from one-half to one minute's duration were given the edges of the ulcer to promote granulation and dermatization. Moderate exposures of from seven to ten minutes was given the body of the ulcer which kept it sterile and controlled the odor. After healing was fairly well established, massage and manipulation of the surrounding tissue was given daily. Later daily administration of diathermy through the underlying tissue was followed by massage, supplemented with fractional doses of roentgen ray to assist in the absorption of the fibrous tissue.

Journal of Urology, Baltimore

9: 525-597 (June) 1924

*Postoperative Results of Nephrolithiasis. W. F. Braasch and G. S. Foulds, Rochester, Minn.—p. 525.
Operative Treatment of Renal and Ureteral Calculi. W. C. Quinby, Boston.—p. 539.
*Cystin Nephrolithiasis: Disintegration of Stone by Alkalinization. A. J. Crowell, Charlotte, N. C.—p. 545.
Renal Stones Permeable to Roentgen Ray. J. M. Culligan, Rochester, Minn.—p. 559.
Relief of Obstructions at Vesical End of Ureter: High Frequency Cystoscopic Scissor Incisor. J. R. Caulk, St. Louis.—p. 565.
Primary Carcinoma of Ureter: Case. H. L. Kretschmer, Chicago.—p. 573.
*Foreign Bodies (Wax) in Male Urinary Bladder. J. H. Turner, Baltimore.—p. 581.
*Tumor of Suprarenal. R. Brown, Santa Barbara, Calif.—p. 587.

Postoperative Results in Nephrolithiasis.—Eight hundred and nineteen of 1,041 patients operated on for renal lithiasis were traced. All of the operations had been performed more than two years, thus affording a reasonable length of time for possible recurrence. The percentage of actual recurrence in the kidney following conservative operation was less than 10 per cent. Many of the so-called recurrences were stones not discovered at the first operation. The percentage of subsequent recurrence in the remaining kidney following nephrectomy was so low (2.75 per cent.) as to indicate that an anatomic factor was present in the affected kidney. The percentage of recurrence was greater in cases of single than of multiple stones, and of small than large stones. The percentage of recurrence does not vary greatly with the type of operation for the removal of stone, but rather with the thoroughness. While pelviolithotomy is the method of choice when possible, Braasch and Foulds feel that the dangers of limited nephrolithotomy have been exaggerated. Nephrolithotomy is particularly indicated in the presence of cortical degeneration adjacent to the stone. Fluoroscopy has proved to be of great practical value, and no conservative operation for renal lithiasis is complete without it. The percentage of recurrence following operation if the fluoroscope is used was under 5 per cent.

Cystin Nephrolithiasis.—Crowell urges if the stone is associated with cystinuria, disintegration should be attempted by the internal administration of alkalies, pelvic lavage with alkaline solutions, and limitation of protein diet, as was done in one case cited.

Candle Wax in Urinary Bladder.—In both of Turner's cases candle wax was found in the bladder. One patient introduced a bougie of candle wax into his urethra to relieve burning in the penis. The second case is said to be the only one in literature which presents calculus formation about a wax nucleus.

Tumor of Suprarenal.—Brown's case was one of tumor similar to that of hypernephroma but not involving the kidney.

Medical Journal and Record, New York

119: 533-584 (June 4) 1924

Endocrine Treatment of Amenorrhea and Menorrhagia. G. Y. Oliver, London, England.—p. 533.
Slight Protracted Fever of Obscure Origin. C. M. Montgomery, Oteen, N. C.—p. 537.
Cecocolic Sphincter Tract. I. S. Hirsch. New York.—p. 541.
Blood Sedimentation. M. E. Alexander, Waterbury, Conn.—p. 549.
Congenital Absence of Right Pectoralis Major Muscle. G. B. Lake, Oceanport, N. J.—p. 552.
*Periarterial Sympathectomy. R. F. Maddren, Changsha, China.—p. 553.
Mental Reaction to Venereal Infection. M. A. Meyer, New York.—p. 554.
Laryngeal Tuberculosis and Its Treatment. E. Danziger, New York.—p. 556.
Antiquity of Gout. L. J. Llewellyn, London, England.—p. 558.
Leonardo da Vinci, the Anatomist and Physiologist. C. A. Clouting, London, England.—p. 559.

SUPPLEMENT

Hereditary Immunity to Rhus Dermatitis. J. B. McNair, Chicago.—p. cxxix.
Ivy Poisoning. C. M. Williams, New York.—p. cxxxi.
Phenolphthalein Eruption. E. W. Netherton, Cleveland.—p. cxxxiv.
Treatment of Acne Vulgaris. O. L. Levin, New York.—p. cxxxvi.
Buccal and Lingual Mucosa in Neurosyphilis. B. L. Elliott and P. F. Stookey, Kansas City, Mo.—p. cxxxviii.
Pathology of Pruritus Ani, Vulvae and Scroti. J. F. Montague, New York.—p. cxl.
Hypertrichosis. W. Weller, New York.—p. cxliii.
Insulin in Furunculosis. J. Bieber, New York.—p. cxliv.

Periarterial Sympathectomy in China.—Maddren reports the first periarterial sympathectomy performed in China for an ulcer of the foot, probably of syphilitic origin. Laboratory reports showed a three plus Wassermann.

Mental Hygiene, Albany, N. Y.

8: 425-648 (April) 1924

Traumatic Neurasthenia. E. F. Buzzard, London, England.—p. 425.
Scientific Study of Delinquent School Children. C. P. McCord, Albany, N. Y.—p. 438.
Sociopsychiatric Delinquency Studies. T. Raphael, A. L. Jacoby, W. W. Harryman and M. M. Raphael, Ann Arbor, Mich.—p. 453.
Significance of Interest for Vocational Prognosis. D. Fryer, Salt Lake City, Utah.—p. 466.
Mental and Moral Problems of Woman Probationer. N. L. Perkins, Detroit.—p. 506.
Advising Social Case Work Agency. H. L. Myrick, Chicago.—p. 522.
Care of Defective Delinquents at Bridgewater, Mass. S. Bates.—p. 530.
Placement and Supervision of Mental Defectives. A. Raymond, Wrentham, Mass.—p. 535.
Prohibition and Alcoholic Mental Disease. H. M. Pollock and E. M. Furbush.—p. 548.

Michigan State Medical Society Journal, Grand Rapids

23: 225-268 (June) 1924

*Ascites: Report of Cases. C. R. Hills, Ann Arbor.—p. 225.
Thrombo-Angiitis Obliterans. W. D. Mayer, Detroit.—p. 227.
*Xanthoma Diabeticorum; Response to Insulin. W. H. Gordon, Detroit, and M. S. Feldman, Ann Arbor.—p. 231.
*Dropper Suction Treatment of Discharging Ears. S. E. Barnett, Detroit—p. 234.
Bismuth in Treatment of Syphilis. A. E. Schiller, Detroit.—p. 235.

Unusual Cases of Ascites.—Hills reports a case of scirrhous carcinoma of the stomach and carcinomatosis of the peritoneum with acute hemorrhagic fibrinous peritonitis occurring in a male, aged 22, who entered the hospital complaining of swelling of the abdomen, slight dyspnea and weakness. He had felt perfectly well up to three weeks previous to entering the hospital, at which time he noticed a pain beneath the right rib margin, especially on movements. Two weeks previous to entrance his abdomen began to swell, and it became more difficult for him to stand upright. His breathing also was becoming slightly embarrassed. Up to the time of entrance he had had no pain in the abdomen, no history of cough, hematemesis or night sweats. Following the enlargement of his abdomen, he was unable to retain any food. He lost about 10 pounds in two weeks and was becoming rapidly weaker. The man died. The diagnosis was made after the death of the patient. Four other unusual cases of ascites are cited.

Xanthoma Diabeticorum.—Gordon and Feldman's case presents two important features: that of the cutaneous lesions occurring in both mother and son, and its surprising response to insulin treatment. The eruption was diagnosed and confirmed by a histopathologic study.

Treatment of Discharging Ears.—First, Barnett instils into the ear canal with a large size medicine dropper a warm antiseptic solution. He prefers equal parts of pure alcohol and a solution of 1:500 neutral acriflavine. After a few minutes the fluid is withdrawn by the suction action of the dropper by pressure in the bulb in the usual manner. The withdrawn fluid is then expelled, the dropper cleaned in sterile water and the drops again instilled. The suction and instillation are repeated until all particles of pus and mucus are removed. When the middle ear is thoroughly drained by the dropper suction treatment, a few drops of the solution are once more instilled and the canal closed with cotton which remains in place until the next treatment, three or four hours later.

Nebraska State Medical Journal, Norfolk

9: 201-244 (June) 1924

Practice of Medicine and Its Problems. M. Nielsen, Blair.—p. 201.
Problem of General Practitioner. J. Buis, Pender.—p. 204.
Opportunities of Present Day Surgeon. K. S. J. Hohlen, Lincoln.—p. 207.
Clinical Surgery. J. E. Summers, Omaha.—p. 209.
Diagnosis of Surgical Lesions of Kidney. C. Emerson, Lincoln.—p. 212.
Pain in Back. R. D. Schrock, Omaha.—p. 214.
Complications of Gonorrhea. W. L. Ross, Jr., Omaha.—p. 218.
Eighteen Cases of Catarrhal Jaundice Following Influenza. J. D. Davis, Genoa.—p. 222.
Interpretations of Cardiovascular Signs. S. Clements, Lincoln.—p. 225.
Glands of Internal Secretion. C. A. Roeder, Omaha.—p. 227.
Alkalies as Adjunct in Septic Surgical Cases. L. E. Penner, Beatrice.—p. 229.
Pregnancy Complicated by Large Ovarian Tumor. E. C. Sage, Omaha.—p. 230.
Large Ovarian Cyst. M. Emmert, Omaha.—p. 232.
Case of Fracture of Navicular Bone of Wrist. J. A. Weinberg, Omaha.—p. 233.
Pain Due to Lesions of Urologic Tract. E. Davis, Omaha.—p. 234.

New Orleans Medical and Surgical Journal

76: 519-566 (June) 1924

Education of Deaf Child. M. A. Goldstein, St. Louis.—p. 519.
Incorrect Diagnosis of Right Iliac Surgical Conditions. A. C. King, New Orleans.—p. 522.
Syphilis and Pregnancy. E. L. King, New Orleans.—p. 526.
Physical Diagnosis. O. W. Bethea, New Orleans.—p. 529.
Operative Cure of Pruritis Ani and Vulvae. C. W. Allen, New Orleans.—p. 532.
Functions of Spleen Demonstrable by Effects of Radio-Activity. A. Henriques, New Orleans.—p. 534.
Relative Value of Percussion and Roentgen Ray in Cardiology. A. E. Fossier, New Orleans.—p. 537.
Roentgen Ray in Diagnosis of Gallstones. L. J. Menville, New Orleans.—p. 542.
Cod Liver Oil as Addition to Dietary Regimen of Undernourished Diabetic. J. B. Guthrie, New Orleans.—p. 544.
*Ovarian Graft: Case. C. J. Miller, New Orleans.—p. 547.

Case of Ovarian Grafting.—The case cited by Miller is of interest because of the behavior of an ovarian graft which was finally removed because of discomfort at the site of its implantation and an intractable metrorrhagia which began with the swelling of the graft and persisted until its removal. This woman, aged 28, two years before Miller saw her had had her appendix removed, together with the entire left and a portion of the right ovary for multiple cysts. A pelvic condition necessitated a second operation. The uterus was curetted, an extensive tear of the cervix repaired, and the uterus suspended. The remnant of the right ovary was markedly cystic, but as small portions of the ovarian tissue appeared normal, it was desirous to conserve function because of the patient's age. Therefore, about half of the remaining portion of the right ovary was tucked into a dry area behind the peritoneum and the left rectus muscle. Miller saw her again about two years afterward. A small mass had appeared about an inch to the left of the scar, which was gradually enlarging and was very sensitive on pressure. Coincident with its appearance a metrorrhagia had developed which had been practically continuous since. Examination showed what was obviously a cystic condition of the ovarian graft, and its excision was advised. The operation was entirely without incident. A small portion of the graft was still apparently normal, but the lower end was cystic and contained about 3 ounces of clear fluid. The pathologic study showed an active corpus luteum. Within a few days after the operation the metrorrhagia ceased entirely and there has been no return of the flow since.

Oklahoma State Medical Association Journal, Muskogee

17: 131-168 (June) 1924

Urologic Problems. J. Z. Mraz, Oklahoma City.—p. 134.
Early Diagnosis in Hyperthyroidism. R. M. Howard, Oklahoma City. —p. 136.
Relation of Eye, Ear, Nose and Throat Specialty to General Medicine and Surgery. O. I. Green, Bartlesville.—p. 138.
Subacute Bacterial Endocarditis. L. A. Riely, Oklahoma City.—p. 141.
Trend of Obstetrics. A. C. Hirshfield, Oklahoma City.—p. 144.

Philippine Islands Medical Association Journal, Manila

4: 125-168 (April) 1924

*Toxicity of Tikitiki Extract by Parenteral Administration. F. Garcia and R. Guevara.—p. 125.
Plea for Early Recognition of Leprosy. H. W. Wade and C. B. Lara. —p. 132.
Nose and Throat Manifestations of Tertiary Yaws. F. Nicolas.—p. 140.
Del Carmen Malaria Survey. H. H. Steinmetz and W. D. Tiedeman. —p. 142.
Case of Diverticulum of Bladder and Vesical Lithiasis. R. Fernandez and M. N. Tuason.—p. 145.

Toxicity of Tikitiki Extract.—The parenteral administration of tikitiki extract was studied experimentally by Garcia and Guevara and it was found that, administered by subcutaneous, intramuscular, intraperitoneal and slow intravenous injections in different animals, tikitiki extract is fatal only in very large doses. The extract is irritant to raw tissues, as shown by its inflammatory effects, such as congestion with much coagulated serum, injected blood vessels, and some petechial hemorrhages after subcutaneous and intramuscular injections of the drug. Intraperitoneal injection of tikitiki extract produces inflammatory reactions on the mesentery and other abdominal organs. Rapid intravenous injection of tikitiki extract is dangerous, for it may kill the patient immediately, if it is slowly administered, a moderately large dose may be injected without producing any untoward effect. The toxicity of tikitiki extract is lessened when its reaction is made neutral by sodium carbonate, using phenolphthalein as indicator. It seems from the results of the experiments that sodium carbonate not only neutralizes the acidity of tikitiki extract but also destroys some unknown toxic substances in the preparation. The symptoms produced by the fatal doses of tikitiki extract rapidly injected into the femoral vein are salivation, rapid and deep respiration, and then convulsions accompanied in many cases by urination and defecation and, finally cessation of heart beat and respiration. When fatal doses of the drug were slowly injected, similar symptoms in addition to vomiting were observed.

Philippine Journal of Science, Manila

24: 249-367 (March) 1924

Distribution of True Fresh Water Fishes in Philippines. A. W. C. T. Herre.—p. 249.
Pachyrrhynchid Group of Brachyderinae, Curculionidae. I. Pachyrrhynchus Germar. W. Schultze.—p. 309.
Nomenclature of Jassoidea. C. F. Baker.—p. 367.

Public Health Journal, Toronto

15 193-240 (May) 1924

Syphilis and Marriage. G. W. Ross.—p. 198.
Judaism's Attitude Toward Social Hygiene. B. R. Brickner.—p. 206.
Modern Reading and Its Relation to Sex Morality. W. F. Harrison. —p. 211.
Social Hygiene Tours. R. A. Kennedy.—p. 216.
Hamilton Health Association. J. H. Holbrook.—p. 219.
Work of Local Social Hygiene Council. H. Todd.—p. 222.

Rhode Island Medical Journal, Providence

7: 81-96 (June) 1924

Diagnosis of Pulmonary Tuberculosis. J. Perkins, Providence.—p. 81.
Treatment of Diabetes Mellitus. A. A. Horner, Boston.—p. 86.

Southwestern Medicine, Phoenix, Ariz.

8: 253-304 (June) 1924

Pulmonary Tuberculosis: Diagnosis. C. M. Hendricks, El Paso, Tex. —p. 261.
Id. Roentgen Ray in Diagnosis. J. W. Laws, El Paso, Tex.—p. 263.
Id. Laboratory Diagnosis. G. Turner, El Paso, Tex.—p. 265.
Id. "Cures." E. A. Duncan, El Paso, Tex.—p. 266.
Id. Tuberculin and Autogenous Vaccines. R. B. Homan, El Paso, Tex.—p. 269.
Id. Artificial Pneumothorax. E. D. Price, El Paso, Tex.—p. 271.
Id. Climate. O. Egbert, El Paso, Tex.—p. 273.
Id. Surgery. W. L. Brown, El Paso, Tex.—p. 275.
Id. Diagnosis and Treatment. F. G. Holmes, Phoenix, Ariz.—p. 281.

Tennessee State Medical Association Journal, Nashville

17: 1-33 (May) 1924

Medical Outlook. H. L. Fancher, Chattanooga.—p. 1.
Urinary Calculi. I. Abell, Louisville, Ky.—p. 4.
Nonsurgical Management of Squint. L. C. Peter, Philadelphia.—p. 9.
*Double Amputation of Legs. J. L. Crook, Jackson.—p. 15.

Simultaneous Double Amputation of Legs.—Crook cites a case in which two surgeons operated simultaneously, each amputating a leg. The total time on the operating table was forty-five minutes. The condition of the patient at the time of the operation being poor, 1 quart of physiologic solution of sodium chlorid was given per rectum. The patient did fairly well during the night, but the next morning he collapsed; 5 pints of physiologic solution of sodium chlorid were injected intravenously. Crook feels that the factors in the treatment which were responsible for saving the patient's life were the synchronous amputation by two surgeons, and the use of physiologic sodium chlorid solution intravenously at the time of collapse the following morning.

Texas State Journal of Medicine, Ft. Worth

20: 65-160 (June) 1924

Prevention of Disease and Safe Treatment of Sick. A. C. Scott, Temple. —p. 75.
Practice of Medicine a Lay Problem. W. Davis, San Antonio.—p. 79.
Relation of Practice of Dentistry to Public Health. W. M. Bourn, San Antonio.—p. 82.
Shall We Have Competent Pharmacy? W. H. Whisenant, San Antonio. —p. 85.
Road to Happiness and Health. W. B. Russ, San Antonio.—p. 87.
Service of Medicine. S. R. Roberts, Atlanta, Ga.—p. 90.
Medical Practice Act Must be Sustained. C. M. Rosser, Dallas.—p. 91.

Virginia Medical Monthly, Richmond

51: 133-196 (June) 1924

Physiology and Pathology of Pancreas. K. D. Graves, Roanoke.—p. 133.
Symptoms and Diagnosis of Diabetes Mellitus. F. H. Smith, Abingdon. —p. 134.
Medical Treatment of Diabetes Mellitus. J. G. Davis, Christiansburg. —p. 139.
Surgical Treatment of Diabetes. H. H. Trout, Roanoke.—p. 142.
Treatment for Resistant Congenital Clubfoot. P. C. Colonna, New York.—p. 144.
*Tendon Ganglion: Case. E. L. Kendig, Victoria.—p. 146.
Conduct of Labor. C. J. Andrews, Norfolk.—p. 148.
Chronic Constipation. J. E. Marable, Newport News.—p. 151.
*Argyria; Two Cases Due to Argyrol. T. D. Davis, Richmond.—p. 154.
Conquering Diphtheria. R. H. DeBose, Roanoke.—p. 155.
Subacute Bronchitis. P. Davis, Roanoke.—p. 157.
Tuberculosis of Skin; Case. J. K. Gray, Marion.—p. 159.
Treatment of Pneumonia. J. A. Noblin, East Radford.—p. 161.
Hyperemesis Gravidarum. G. A. Wright, Abingdon.—p. 161.
Diabetic Coma; Case. J. J. Giesen, Radford.—p. 164.
Significance of Infection. D. L. Harrell, Suffolk.—p. 166.
Pneumothorax Occurring in Bronchial Asthma. H. H. McGuire, Richmond.—p. 167.
Psychotherapy. G. B. Rollins, Richmond.—p. 170.

Ganglion of Gastrocnemius Tendon.—Kendig's patient gave a history of having fired heavy engines which were not equipped with stokers, on the railroad in the summer of 1922. After a few months of this work, he felt an annoying pain in the right popliteal space, which was greater when using the leg. Later he experienced some weakness in the leg and could feel a very slight enlargement behind and just below the knee. The condition became more annoying and he had to stop work. The tumor which was removed under local anesthesia, proved to be a ganglion of the inner head of the gastrocnemius muscle.

Argyria Due to Argyrol.—One of Davis' patients had been spraying a 25 per cent. solution of argyrol into the nose and throat for several months. The other had been using a solution of argyrol on the gums at frequent intervals for several years. These patients had no symptoms that could be attributed to chronic silver poisoning, but the typical appearance of the skin in conjunction with the history established the diagnosis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

5: 47-122 (April) 1924

*Reduction of Bactericidal Power of Blood by Sodium Citrate and Other Decalcifying Agents. L. Colebrook and E. J. Storer.—p. 47.
*Effect of Radiation on Bactericidal Power of Blood. L. Colebrook, A. Eidinow and L. Hill.—p. 54.
*Inoculation and Implantation Experiments in Monkeys with Glands from Cases of Hodgkin's Disease. M. J. Stewart and J. F. Dobson.—p. 65.
Growth Requirements of Hemolytic Influenza Bacilli; Bearing on Classification of Related Organisms. P. Fildes.—p. 69.
*Behavior of Depancreatized Dogs Kept Alive with Insulin. F. N. Allan, D. J. Bowie, J. J. R. Macleod and W. L. Robinson.—p. 75.
*Influence of Mineral Deficiency in Goats' Milk on Skeletal Growth of Kids. S. V. Telfer and J. A. Crichton.—p. 84.
*Experimental Production of Biliary Cirrhosis by Salts of Manganese. G. M. Findlay.—p. 92.
Standardization of Antidysentery (Shiga) Serum. H. J. Sudmersen, B. F. Runge and R. A. O'Brien.—p. 100.
Relation of "Smooth" and "Rough" Forms of Intestinal Bacteria to "O" and "H" Forms of Weil and Felix. J. A. Arkwright and A. N. Goyle.—p. 104.
Properties and Preparation of Insulin; Picrate-Acetone Method of Preparation. E. C. Dodds and F. Dickens.—p. 115.

Decalcifying Agents Reduce Bactericidal Power of Blood.—Experiments are described by Colebrook and Storer which show that the addition of decalcifying agents to normal blood considerably reduces its power to kill staphylococcus and streptococcus. The result is attributable to interference with some of the functions of the leukocytes. Blood which has an enhanced bactericidal power to staphylococcus and streptococcus, resulting from a previous inoculation of vaccine, is affected by the addition of sodium citrate in the same way as is normal blood. In consequence of this it is recommended that citrated blood should not be employed for "immunotransfusion."

Effect of Irradiation on Bactericidal Power of Blood.—According to Colebrook, Eidinow and Hill, both the serum and the leukocytes contribute to an increased bactericidal effect achieved by the blood of rabbits after they have been exposed to various radiations which produce inflammation of the skin. The increase in hemobactericidal power is found also in pigs, and to a less degree in man. It is suggested that the products of the damaged tissue cells evoke this reaction.

Experimental Inoculation of Glands from Hodgkin's Disease.—Inoculation and implantation experiments with lymph glands from two active cases of Hodgkin's disease were carried out by Stewart and Dobson on three *Macacus rhesus* monkeys and one bonnet monkey. One *M. rhesus*, after four and one-half months, showed an unusual degree of simple hyperplasia of the lymphoid follicles and of the malpighian bodies of the spleen, especially of the germ centers in each instance, together with a peculiar giant cell reaction, probably of foreign body type, around the implanted material. The remaining experiments yielded completely negative results, the bonnet monkey being under observation for three years and one *M. rhesus* for two years before they were slain for examination. These experiments are said to afford further proof that whether or not Hodgkin's disease is an infective granuloma, it is at least not due to a virus capable of reproducing the disease in monkeys.

Liver Changes in Depancreatized Dogs Kept Alive by Insulin.—Although the administration of insulin leads to a disappearance of the fat which accumulates in the liver of dogs immediately after depancreatization, it was found by Allan and others that liver changes occur in depancreatized dogs kept alive for relatively long periods by the use of insulin. In cases of death, the liver contained very large amounts of fat (39.5 per cent.) which was deposited in large globules in the cells of the periphery of the lobules, while the cells at the center of the lobules showed cellular degeneration with less fatty infiltration. The absence of such changes in man in cases of diabetes which have been treated with insulin for longer periods suggests that the remaining pancreatic tissue plays some part in fat metabolism. Pending further investigations, some possible explanations are discussed.

Effect of Mineral Deficiency of Milk on Growth.—It is suggested by Telfer and Chrichton that a comporatively small deficiency of mineral matter in the diet of a suckling animal may give rise to severe nutritional disturbance with defective deposition of bone salts. The normal mineral content of milk is probably near the minimal requirements of the species, since the rate of ossification can be considerably increased by a greater concentration of mineral matter, and a small reduction is followed by defective growth and impaired nutrition.

Manganese Produces Experimental Biliary Cirrhosis.—The toxic effects of manganese were studied by Findlay. When injected subcutaneously in large doses manganous chlorid is extremely toxic to the parenchyma of the liver and kidney. In small repeated doses its toxic action is chiefly exerted on the liver. It has been possible to produce by repeated subcutaneous injections of manganous chlorid an experimental form of liver cirrhosis in rabbits, rats and guinea-pigs, while a similar condition has also been brought about in rats by the oral administration of the same salt. In its earliest stages the fibrous overgrowth in the liver is confined to the periphery of the lobules in relation to the portal spaces, the type of cirrhosis being very definitely monolobular. In its later stages the freshly formed fibrous tissue invades the whole of the lobules. Jaundice is often present. A possible clue to this action of manganous chlorid may be found in the fact that manganese salts are very largely excreted from the body by means of the bile.

Calcutta Medical Journal

19: 639-682 (March) 1924

Treatment of Arthritis by Nonspecific Stimulation Therapy. H. N. Ghosh.—p. 639.
Latent Phase of Kala-Azar. D. N. Banerjee.—p. 655.
Case of Auricular Fibrillation. S. C. Sen Gupta.—p. 661.

Edinburgh Medical Journal

31: 285-340 (May) 1924

Home Treatment of Mentally Defective Infants and Young Children. J. Thomson.—p. 285.
Round or Stoop Shoulder Deformity; Report of Case. W. A. Cochrane.—p. 307.
Value of Pirquet Method and Weight-Height to Height-Age Method of Estimating Nutrition in Infancy. T. Y. Finlay.—p. 317.
*Case of Causalgia Treated by Modified Periarterial Sympathectomy. W. Q. Wood.—p. 329.
Case of Tubal Twin Pregnancy. J. A. Kynoch.—p. 332.

Periarterial Sympathectomy for Causalgia.—Wood relates the case of a man who, following a crushing injury of the finger, developed causalgia. Amputation of the finger became necessary. Pain developed in an adjoining finger and as no treatment availed, a periarterial sympathectomy was undertaken on the brachial artery. When the artery was picked up with dissecting forceps the patient experienced pain which was referred to the affected region of the hand. He was able to tell at once when the artery was being manipulated. The surface of the artery was more vascular than normal, with minute vessels running in the transverse direction. With a fine needle, the outer coat of the artery was injected with a ring of absolute alcohol. By the following morning, the pain in the hand had disappeared. The further progress was uneventful. There was no return of the pain.

Glasgow Medical Journal

101: 253-324 (May) 1924

Medical Education. A. F. Fergus.—p. 253.
Case of Lymphadenoma with Relapsing Pyrexia of Pel-Ebstein Type. J. Henderson and K. W. Mackenzie.—p. 267.
Treatment of Ununited Fractures and Other Bone Defects by Bone Grafts and Bone Comminution. G. H. Stevenson.—p. 274.
Double Penis and Double Vulva. A. MacLennan.—p. 287.

Indian Medical Gazette, Calcutta

59: 221-272 (May) 1924

Results of Antimalaria Measures in Five Towns in United Provinces. J. A. S. Phillips.—p. 221.
*Chronic Dysenteric Peritonitis Probable Cause of Common Form of Ascites in Tropics. J. W. D. Megaw and G. C. Maitra.—p. 228.
Prophylactic Inoculation in Prevention of Chronic Carriers of Typhoid and Paratyphoid Bacilli. J. A. Cruickshank.—p. 232.
Day in Shikarpur Eye Clinic. W. A. Fisher.—p. 235.
Edema. W. Burridge.—p. 237.

Petrol for Cleansing Skin Prior to Operating. F. J. W. Porter.—p. 237.
Treatment of Oriental Sore by Intravenous Injections of Antimony Tartrate. D. C. Mazumdar.—p. 238.
Foreign Bodies in Ear and Nose. F. D. Bana.—p. 239.
Case of Hypersensitiveness to Horse Serum with Treatment by Desensitization. A. R. J. Douglas.—p. 240.
Cases of Difficult Labor. A. G. Tresidder.—p. 242.
Case of Chloroform Poisoning by Oral Route. P. B. Mukherji.—p. 244.
Fatal Case of Poisoning by Neokharsivan. J. P. Cullen.—p. 245.
Case of Exfoliative Dermatitis After Novo-Arsenobillon Injections. N. N. Ghosh.—p. 245.

Chronic Dysenteric Peritonitis.—The commonest form of ascites in India is not due to cirrhosis of the liver, but to a fibrosis of the peritoneum by the toxins of the bacilli of dysentery. The name suggested by Megaw and Maitra is "chronic dysenteric peritonitis." The treatment of the disease is unsatisfactory in most cases unless there is some coexisting disease which is an important factor in causing the ascites. If there is such a coexisting disease its cure may lead to a restoration of the balance between exudation of fluid and its reabsorption. The best prospect of controlling the disease lies in the proper treatment of bacillary dysentery by salines. This treatment brings about the rapid removal of the bacillary toxins from the intestine, and thus there is little tendency for the toxins to escape through the bowel wall to the peritoneum.

Journal of Laryngology and Otology, Edinburgh

39: 245-300 (May) 1924

Surgical Treatment of Suppurative and Certain Nonsuppurative Affections of Labyrinth. W. Milligan.—p. 245.
Septic Otitic Thrombosis of Cranial Blood Sinuses and Jugular Bulb. J. S. Fraser.—p. 253.
Establishment of Ear, Nose and Throat Department. J. B. Cavenagh.—p. 262.
Mucocele of Frontal Sinus Caused by Large Osteoma. W. G. Howarth.—p. 265.

Journal of State Medicine, London

32: 201-250 (May) 1924

Neurotropic Virus. C. Levaditi.—p. 201.

Lancet, London

1: 1041-1090 (May 24) 1924

County Venereal Diseases Scheme. J. J. Butterworth.—p. 1041.
*Acetonemia and Volvulus of Small Intestine in Childhood. F. J. Poynton.—p. 1045.
*Cases of Aleukia or Aplastic Anemia. S. C. Dyke.—p. 1048.
Indications for Operative Treatment in Cases of Pulmonary Tuberculosis. H. M. Davies.—p. 1051.
Spore-Forming Bacterium on Rice Grains. S. R. Bose.—p. 1054.
Case of Spondylitis Deformans in Kinkajou. N. S. Lucas.—p. 1055.
*Cutaneous Metastases in Carcinoma of Breast. W. D. Newcomb.—p. 1056.

Acetonemia as a Symptom in Children.—Poynton cautions against being content with the diagnosis of acetonemia in young children when there is a history of abdominal pain and partial constipation, even though that acetonia be intense and physical examination of the abdomen negative. Acetonemia is in childhood a symptom that may occur under very different conditions. Very frequently it is noticed as a fleeting event in an illness and, apparently, does not perceptibly alter the outlook, though there may be some unusual drowsiness, muscular feebleness, or be recognized as an event which may have no serious clinical significance at all. In other cases, as in diabetes, it may have the greatest importance as a danger signal. In yet others it may be the prominent feature in a recurrent illness which may, though rarely, prove fatal, and in which after death no changes in the viscera are found, the liver possibly excluded, that caused death. Finally, it may prove a cause of grave errors in diagnosis.

Aleukia or Aplastic Anemia.—Five cases are reported by Dyke. Three of the cases afforded evidence of infection of the bone marrow; clinically all were characterized by a diminution, both actual and relative, of the polymorphonuclear leukocytes and by a hemorrhagic tendency; in all in which observations were made the platelets were markedly deficient. Dyke suggests that, if looked for, bone marrow infection probably would be found in all these cases.

Cutaneous Metastases in Breast Cancer.—In the case cited by Newcomb, the primary growth was a carcinoma simplex of the breast, consisting of rather large polygonal cells arranged in solid alveoli and trabeculae. Of the skin nodules, the larger ones showed a papillomatous overgrowth of squamous epithelium lying on a core of secondary carcinoma. In some cases the carcinoma appeared to have formed small cysts in the epidermis itself, many of the cysts containing blood as well as growth. Serial sections showed that they were not true cysts, but that the carcinoma had grown along lymphatics up to the surface epithelium and had then mushroomed out. At the same time the epithelium had grown even more rapidly, and the space between it and the carcinoma was filled with blood.

Medical Journal of Australia, Syndey

1: 429-452 (May 3) 1924

*Paroxysmal Hemoglobinuria of Horses and Cattle and of Man. C. E. Corlette.—p. 429.
Sulphuretted Hydrogen Poisoning: Eye Symptoms—"Pink Eye." H. P. Clark.—p. 439.

SUPPLEMENT

Tuberculosis in Relation to Social and Economic Conditions. J. S. Purdy.—p. 257.
Types of Tubercle Bacilli Prevailing in Australia. W. J. Penfold.—p. 261.
Incidence of Tuberculosis in Australia. W. J. Penfold.—p. 263.
Examination of Sydney Suburban Dairy Milk for Tubercle Bacilli. E. W. Ferguson.—p. 271.
Pneumonoconiosis and Tuberculosis Among Australian Miners (1902-1921). F. R. Kerr.—p. 273.
Pulmonary Tuberculosis in Association with Pneumonoconiosis. S. A. Smith.—p. 275.
Tuberculosis in Natives of Territory of New Guinea. G. M. Heydon.—p. 277.
Dispensaries in Control of Tuberculosis. S. Gillies and C. G. McDonald.—p. 279.
Defects of Sanatorium Treatment with Relation to Prevention of Tuberculosis. H. W. Palmer.—p. 281.
Position of Sanatorium in Control of Tuberculosis. J. G. Hislop.—p. 282.
Incidence and Mortality of Diphtheria in Australia. W. C. Sawers.—p. 284.

Paroxysmal Hemoglobinuria.—The etiology and pathology of paroxysmal hemoglobinuria, equine and human, are discussed by Corlette. In the horse, reasons are given for believing that the dietary is liable to be very low in calcium through the nature of the customary dietary and the enormous variations that occur in the calcium content of oat hay or straw. It is thought likely that in the horse functional liver disorder promoted by calcium deficiency or by chill may lead to deficient catalase production. In the typical paroxysmal hemoglobinuria of man, evidence is cited showing conclusively that hemolysis occurs within the refrigerated part, in the cold blood there present. The evidence at hand fails to support the now current view that the hemolysis occurs in the internal organs at a period subsequent to the chilling. It does not contradict it, but makes it superfluous. It has not been found possible to coordinate and connect together the equine type with the type described as most frequent in man. In man two distinct types of paroxysmal hemoglobinuria appear to occur. It is suggested that the second and less common of these types may be homologous with the equine disease. It is suggested that the phenomenon known as "second wind" in athletes is due to establishment of catalase equilibrium in response to a demand for a greater output from the liver. It is also suggested that the pain and stiffness that occurs in over used untrained muscle may possible be due to a muscular change similar in kind to that which occurs in horses suffering from paroxysmal hemoglobinuria, but only very slight in degree.

South African Medical Record, Cape Town

22: 161-184 (April 26) 1924

Use of Pneumococcal Vaccine. S. Lister.—p. 162.
Principles of Antenatal Hygiene. R. L. Impey.—p. 167.
Plague: Combined Vaccine and Serum Therapy. J. Pratt-Johnson.—p. 170.
Radium Therapy in Uterine Diseases. D. de V. Hugo.—p. 174.
Sterilization of "Mental Defect." C. H. Bidwell.—p. 175.

Tubercle, London

5: 361-408 (May) 1924

Artificial Pneumothorax. C. Riviere.—p. 361.
Treatment of Pulmonary Tuberculosis. N. D. Bardswell.—p. 370.
When Should Thoracoplasty Be Advised? S. V. Pearson.—p. 376.

Annales de l'Institut Pasteur, Paris

38: 371-448 (May) 1924

*Prevention of Tuberculosis in Cattle. Calmette and Guérin.—p. 371.
*Vaccination Against Tuberculosis by Mouth. A. Calmette et al.—p. 399.
*Significance of Zinc in Food. G. Bertrand and B. Benzon.—p. 405.
Antibodies After Injections of Mallein. Brocq-Rousseu et al.—p. 420.
Sterilization of Circulating Liquids in Thin Layer. H. Stassano.—p. 427.

Prevention of Tuberculosis in Cattle.—Calmette and Guérin cultivated for thirteen years a strain of the bovine type of the tubercle bacillus on potatoes which were boiled in bile containing 5 per cent. glycerol. The bacilli completely lost their virulence, but still produced tuberculin. Subcutaneous injection of from 50 to 100 mg. of these germs in calves less than two weeks old protected them for at least eighteen months against an intravenous injection of virulent germs. They recommend revaccination every year.

Vaccination by Mouth Against Tuberculosis.—Calmette, Boquet and Nègre found that several times repeated ingestion of the bacilli mentioned above, treated with bile, prevents oral infection in young guinea-pigs and rabbits.

Significance of Zinc in Food.—Bertrand and Benzon's experiments on mice seem to indicate a physiologic importance of zinc.

Annales de Médecine, Paris

15: 461-540 (June) 1924

Bronchopulmonary Syphilis. M. Letulle et al.—p. 461.
Histology of Multiple Sclerosis. Guillain and Bertrand.—p. 476.
Pressure in Artificial Pneumothorax. Bertier and Loison.—p. 497.
*Dissociated Icterus. M. Labbé et al.—p. 513.
Stomach Function Test. J. Koopman.—p. 521.
*Hypothermia and Azotemia. J. J. Mozer.—p. 526.

Dissociated Icterus.—Labbé, Doumer and Deglaude confirm only a slight lowering of the surface tension of the urine in patients with fever or after chloroform anesthesia. Hay's test is not reliable. Pettenkofer's test was negative with these urines. They attribute Brulé's divergent findings to the difficulty of estimating the color in this test. Ingestion of 1.5 gm. of biliary salts did not change the surface tension in these patients. This is another reason against the alleged impairment of the metabolism of biliary acids in fever and after anesthesia.

Hypothermia and Azotemia.—Mozer confirms clinically the parallelism between azotemia and lowering of the temperature. Ingestion or injections of large amounts of urea produced the same phenomenon in animals. He believes in a direct toxic action of urea in uremia.

Archives Franco-Belges de Chirurgie, Brussels

27: 193-272 (March) 1924

*Congenital Dislocation of Hip Joint. M. Descarpentries.—p. 193.
Early Reflex Nervous Disturbances After Trauma. L. Delrez.—p. 200.
Congenital Absence of One Leg. R. Massart.—p. 205.
*Multiple Cysts of the Bones in Children. M. Du Pan and A. Grumbach.—p. 211. Idem. E. Claes.—p. 224.
*Cystic Osteitis of Humerus. Aubert.—p. 216.
Solitary Cyst in Humerus. Marique.—p. 229.
Vertebral Anomaly Raising One Scapula. Maffei.—p. 230.
*Osteochondritis of the Pubis. M. van Neck.—p. 238.
*Congenital Flexion of the Knees. E. Delcroix.—p. 241.
Surprises and Failures in Treatment of Clubfoot. M. van Neck.—p. 246.
*Correction of Congenital Dislocation of the Hip Joint. Parisel.—p. 256.
Necropsy Findings in Case of Spina Bifida with Clubfeet and Congenital Dislocation of the Hip Joints. M. van Neck.—p. 259.
*Local Vaccination in Treatment of Dermatoses. Lorthioir.—p. 263.

Congenital Dislocation of Hip Joint.—Descarpentries extols the excellent outcome in two cases of congenital luxation of the hip joint treatment of which had been neglected till the age of 17 and 21, and which he corrected and insured immobilization with one or two surgical screws to hold the head in place. This metal fixation does away with the necessity for immobilization in plaster, and there is enough play of the muscles to protect them against atrophy. The presence of the foreign body stimulates the parts to more active repair, the callus forming a barrier against reproduction of the dislocation. He removed the screws after three months.

Multiple Cysts in the Bones in Children.—The boy, now 10 years old, presents a typical example of Recklinghausen's fibrous osteitis, the only instance in a child of which Du Pan and Grumbach have found any record. He was healthy for several years of life, with nothing to suggest rickets or inherited taint of any kind. Claes' patient was a girl, aged 10, healthy until 2. All the long bones seem to be affected.

Cystic Osteitis of the Humerus.—The shaft of the humerus was resected in the girl, aged 13, after spontaneous fracture. Three weeks later a strip from the girl's tibia was implanted in its place. The implant retained its vitality and the arm is now used normally.

Osteochondritis of the Pubis.—Van Neck thinks that tuberculosis can be positively excluded in the two cases he reports in girls, aged 8 and 11. The focus was scraped out in both, and there has been no tendency to recurrence during the year or two since. He regards the case as an affection similar to Köhler's tarsoscaphoid disease, Legg's disease and analogous disturbances in rapidly growing bones.

Congenital Flexion of Both Knees.—The extreme contracture was corrected by severing the hamstring tendons at the age of about 4. Occult spina bifida may have been a factor as is accepted for certain forms of congenital talipes. In twenty-five of the twenty-nine similar cases on record, the anomaly was bilateral and it was always progressive or inclined to recur.

Orthopedic Treatment After Reduction of Hip Joint.—The child's efforts to prevent discomfort counterbalanced the effects of the reduction. Fastening the corrected leg to the sound leg proved useless, but Parisel obtained an ideal result by putting the sound leg in a plaster cast, leaving the corrected leg loose. In fifteen days the lordosis had subsided, the pelvis had straightened, and the child now walks with scarcely a trace of a limp.

Local Vaccination in Dermatoses.—Lorthioir has become converted to Besredka's view as to the importance of the skin in active immunization since he has been treating pure staphylococcus processes in children with dressings dipped in staphylococcus vaccine. By the second day the aspect of the lesions had entirely changed, and healing proceeded more rapidly than under any other treatment.

Bulletins de la Société Médicale des Hôpitaux, Paris

48: 743-790 (May 23) 1924

Putrid Pericarditis with Vomica. H. Dufour and H. Baruk.—p. 744.
Cerebral Thrombosis in Polycythemia. E. Ledoux.—p. 748.
*Paresis After Preventive Tetanus Antitoxin Treatment. Sainton et al.—p. 754.
Polyneuritis After Idem. Souques et al.—p. 757.
Radiotherapy in Hodgkin's Disease. Louste et al.—p. 761.
*Undulant Fever in Carcinosis. Trabaud.—p. 771.
Serotherapy in Tuberculosis. A. Jousset.—p. 777.
Diphtheria Anatoxin in Preventive Vaccination. J. Roubinovitch et al.—p. 782.

Paresis Following Preventive Injections of Tetanus Antitoxin.—Sainton and his co-workers in a case of occupational injuries, in which two injections of antitetanic serum were administered at a one and one-half year interval, found slight paresis in the upper limbs but no characteristic amyotrophia; dissociated disturbances of electric excitability of indistinct radicular origin, and fibrillary contractions. The last symptom indicates a lesion of the spinal cord, explaining the diffusion and dissociation of excitability, and it proves the toxic action of the antiserum on the spinal cord. They emphasize that these effects of a preventive antitoxin therapy in occupational traumas may have a practical and medicolegal significance.

Wavelike Fever in Carcinoma.—Traubaud reports a case of undulant fever in liver cancer with pulmonary metastases, in which the necropsy and microscopic examinations showed a trabecular adenoma of the liver developed through the lymphatic glands into a malignant tumor of the whole organ. The emboli passing into the blood vessels and the right heart produced a miliary carcinosis of both lungs. His conclusion is that disintegration of the tissues and absorption of the softened products caused an autointoxication of the organism and the undulant type of fever.

Comptes Rendus de la Société de Biologie, Paris

90: 1205-1300 (May 16) 1924. Partial Index

Direct Division of Ovocytes in the New-Born. M. de Kervily.—p. 1226.
Irradiation and Coagulability of the Blood. Pagniez et al.—p. 1227.
*Action of Lungs on Blood Sugar. H. Roger et al.—p. 1228.
The Glycemia-Acidosis Threshold. E. Aubel and R. Targowla.—p. 1230.

Mechanism of the Benzoin Reaction. R. Targowla.—p. 1232.
The Reflexes in Disseminated Sclerosis. G. Guillain et al.—p. 1235.
Activation by Passage of Electrons Through Walls. P. Girard.—p. 1236.
Ovarian Implant Does Not Begin to Function Until After Removal of Testes. Lipschütz and Voss.—p. 1239.
Protein Shock by Digestive Tract. F. Arloing et al.—p. 1243.
Experimental Digestive Anaphylaxis. F. Arloing et al.—p. 1245.
*Stain for Elastic Fibers. S. Bonnamour and A. Barsotti.—p. 1247.
Action of Glycerin on Rabies Virus. A. Rodet.—p. 1259.
Antibactericidal Action of Certain Antiserums. A. Rodet.—p. 1262.
The Daranyi Reaction in Tuberculosis and Cancer. A. Sauvan and X. Chiappe.—p. 1265 and p. 1267.
The Enterococcus is Often Pathogenic. Morin et al.—p. 1268.
*Action of Platelets on Blood Pressure. J. Roskam.—p. 1277.
Respiratory Automatism or Reflex Action? E. De Somer.—p. 1284.
*Influence of Insulin on Respiration. C. Heymans and Matton.—p. 1288.
Gelatin Arrests Bacteriophage Action. P. Brutsaert.—p. 1292.
Metabolism of Frog's Heart. J. F. Bouckaert.—p. 1295.

Action of the Lungs on Blood Sugar.—Roger and his co-workers say that their experiments on dogs show that the blood of the left heart contains less proteid sugar (sugar derived by hydrolysis from the serum protein) than the blood in the right heart. This proves that the lung acts on the proteid sugar, liberating glucose. That the blood in the arteries is not always richer in glucose than the blood in the veins is explained by the glycolytic functioning of the lung. They conclude from their research that the lungs have a double action, liberation of sugar under the influence of oxygen, and more or less complete destruction of the sugar liberated. Evaporation of water in the lungs renders the blood more concentrated, and this aids in increasing the proportion of sugar. The splitting of the sugar occurs under the influence of the oxygen, but the lungs may have some special function in this line besides.

The Elastic Fibers in the Sputum.—Bonnamour and Barsotti describe a simple and rapid technic which can be used in the laboratory and by any physician. Employing the method of Burri-Hecht, they mix with india ink the sediment of the sputum liquefied by sodium hydroxid. This gives a dark-field effect on which the elastic fibers show up white and are easily recognized. They say that this method confirms the opinion that the elastic fibers always appear dissociated or in alveolar fragments but never in amorphous bunches. Their presence is an important sign of progressive pulmonary tuberculosis.

Action of Platelets on Blood Pressure.—Roskam says his experiments show that an aqueous extract of rabbit platelets has a hypotensive action in the rabbit and dog. A similar extract of dog and human blood platelets has no effect on the carotid pressure in the rabbit and dog. His conclusion is that the platelets of mammals do not have a constant action on normal or pathologic arterial tension.

Influence of Insulin on Respiration in Rabbit.—Heymans and Matton report that their experiments with 10 gm. of glucose administered by intravenous injection plus injection of 60 units of insulin did not produce an abnormal increase in the respiratory metabolism in rabbits. The same result was obtained when from 6 to 25 gm. of glucose in hypertonic solution was injected. This proves, they say, that hyperinsulinemia has no stimulating effect on glucose combustion, and that the action of insulin must be by some other mechanism.

Encéphale, Paris

19: 265-336 (May) 1924

*Lesions of Congenital Myxedema. M. G. Marinesco.—p. 265.
Obsession of Being Influenced. A. Ceillier.—p. 294. Cont'n.
Respiratory Rhythm in Nervous Diseases. Lévy and Van Bogaert.—p. 302.
*Neurorelapses Under Mercury. A. Austregesilo.—p. 307.

The Lesions in Congenital Myxedema with Idiocy.—Marinesco explains the mechanism of cretinoid idiocy on a new basis: The athyria produces a decrease in metabolism owing to the partial or total lack of the stimulating action of the thyroid hormones on intracellular oxidations. The retarding of nutrition interferes with the normal growth of the organs. The mental disturbances, like the diminished functioning of all the organs, are due to the abnormal development of the cells, in brain and elsewhere, which do not grow to normal size. The metabolism of the ions is likewise disturbed by the thyroid deficiency. The defective oxidations explain the infiltration of mucin into the tissues and the skin, also the presence of glycogen in the nerve elements. He gives twenty-seven photomicrographs.

Neurorelapses Under Mercury.—Austregesilo emphasizes that mercury produces frequently neurorelapses, although they are less pronounced than those due to the arsenicals. The cervical nerves are often affected in neurorelapses. His experience indicates that the eighth nerve is more susceptible to arsphenamin, and the seventh to mercury. The mercury neurorelapse is precipitated by an insufficient treatment. The disturbances may be functional, of toxic origin, and are usually curable, but resist treatment if destructive lesions exist in the nerve tissue itself. Treatment of neurorelapses consists in larger doses of mercury or in moderate doses of neo-arsphenamin at short intervals. Sodium iodid is also of help in these cases.

Journal d'Urologie Médicale et Chirurgicale, Paris

17: 273-352 (April) 1924

*Urethroprostatitis. A. Hogge.—p. 273. Conc'n.
*Function of Remaining Kidney. M. Negro and R. Lévy.—p. 289.
*Hematuria from Varices in Bladder. V. Cristol.—p. 294.
The Common Germs in Bladder Disease. G. Cirillo.—p. 302.
Heterograft of Testis. A. Lipschütz and W. Krause.—p. 308.
Autoserotherapy in Gonococcus Arthritis. J. Bardon.—p. 311.

Urethroprostatitis.—Hogge in discussing gonococcal disease of the urogenital apparatus from the practitioner's standpoint, insists on mild measures in chronic cases. The sound portions of the mucosa must not be continually irritated. The prostate is always involved with posterior urethritis, and the prostatitis may persist after healing of the latter. Any one of the urogenital organs may be affected independently, but the prostate is peculiarly vulnerable.

Functional Compensation of the Remaining Kidney.—Negro and Lévy report that after removal of a kidney practically sound, aside from a large cyst, the remaining kidney in a week was eliminating phenolsulphonephthalein as effectually and completely as both kidneys had eliminated the stain before the operation.

Hematuria from Varices in the Bladder.—In Cristol's two cases the diagnosis of rupture of a varix was retrospective. Potassium iodid and local electric cauterization may be required, as there is danger of infection, thrombosis and embolism, unless the varicose tendency yields to hygiene and rest.

Nourrisson, Paris

21: 153-216 (May) 1924

Invasion and Pathology of Tuberculosis in Infants. Marfan.—p. 153.
Maternal Antibodies (Tuberculosis or Syphilis) in Infants' Serum. M. L. Ribadeau-Dumas.—p. 175.
Congenital Heart Disease. H. Lemaire and Blechmann.—p. 183.
*Infectious Process in Gum with First Dentition. Hallez.—p. 196.

True Teething Disturbances.—Hallez describes two cases of serious general symptoms from an infectious process in the follicular sac, preceding the eruption of the tooth. Nothing was found to explain the fever and convulsions but slight congestion in the upper gum. The next day the gum was swollen and opalescent. Lancing released a little purulent fluid, and the cure was prompt and complete. In one of the cases the upper gum had to be incised both right and left; in the other case merely the lower gum on one side. Hallez remarks that from Hippocrates to the end of the eighteenth century, all disturbances in children were ascribed to teething or to worms, but since then the pendulum has swung too far in the other direction.

Revue de Chirurgie, Paris

62: 283-361, 1924

*Attempts at Local Vaccination. P. Delbet et al.—p. 283.
*Stab Wound of the Auricle. Vautrin and Guillemin.—p. 294.
*Cancer of the Biliary Crossroads. Brocq and Maduro.—p. 316.
*High Diastase in Urine Sign of Pancreas Disease. C. Permin.—p. 341.
Lymphatic Connections Between Appendix and Duodenum-Pancreas Region. D. Berceanu.—p. 356.

Attempts at Local Vaccination.—Delbet, Mocquot and Mornard found local application of vaccine much less active than general application, but think that their results justify combination of the two in certain cases. In the form of an

unguent, the vaccine proved particularly useful in treatment of burns and bedsores.

Wound of the Left Auricle.—An hour and three quarters elapsed after the stab wound of the left auricle before there were signs that the heart had been injured. The young man had a syncope not long after the stab. He recovered after the pericardium had been cleared out and four stitches taken in the auricle. In twenty-nine stab wounds of either the right or left auricle, which are compared with this, the wound was in the third interspace in eleven.

Cancer of the Bile Passages.—Brocq and Maduro report two cases of cancer at the junction of the bile ducts which confirm that cancer in this region is generally small and easily removed. But the insidious stenosis and retention of bile are liable to entail peculiarly grave general disturbances.

Diastase in the Urine as Gage of Acute Pancreatic Disease.—Permin relates that the figure representing the diastase in the urine was 1,024, instead of the normal 8 to 16, in a youth with a suppurating cyst in the pancreas. Research on rabbits and dogs confirmed the rapid rise in the diastase content of the urine when the pancreas was exposed and massaged, or artificial pancreatitis induced. The figure rose from 8 to 256 in some of the rabbits.

Schweizerische medizinische Wochenschrift, Basel

54: 493-516 (May 29) 1924

Acclimatization in High Altitudes. A. Loewy.—p. 493.
Quantitative Urine Tests. E. Herzfeld.—p. 496.
*Viscous Drugs and Cocain Anesthesia. H. Graf.—p. 498.
*Heterosexuality of Secondary Characters. B. Garfunkel.—p. 500.
Amanita Verna Poisoning. S. Wieser.—p. 505.
Action of Sugar and Salt on Germs. A. Meier.—p. 506. Conc'n.

Viscous Drugs and Cocain Anesthesia.—Graf applied various viscous substances to the cornea. Those of animal origin, especially beef serum, enhanced the anesthetizing action of cocain. Vegetable mucilages and emulsions of lipoids decreased it.

Heterosexuality of Secondary Characters.—Garfunkel concludes that great caution is necessary before declaring some of the characters of the eunuchoid as heterosexual, even if they resemble the female type (breasts, pelvis).

Archivio Italiano di Urologia, Bologna

1: 1-98, 1924

Hemorrhage and Fistulas with Pyelolithotomy. G. Nicolich.—p. 1.
*Remote Results of Surgery for Kidney Calculi. C. Boretti.—p. 8.
Leukoplakia of Kidney Pelvis. C. Chiaudano.—p. 36.
*Pyelography in Urologic Practice. V. Mattei.—p. 45.
Suprapubic Cystoscopy. E. Pirondini.—p. 78.
*Syphilis of the Kidney. S. Rolando.—p. 81.
Syphilis of the Prostate. G. Bruno.—p. 84.

The "Archivio."—This newly founded, high grade bimonthly is published by Gardini, Lasio and Nicolich, with M. Mattioli, via Marsala 47, Bologna, as managing editor. Subscription to the volume (of not less than 600 pages) costs 100 lire.

Remote Results of Surgery of the Kidney.—Boretti has traced to date 80 of the 180 patients who had had stones removed from the kidney from two to fourteen years before. There was recurrence in one of the 7 nephrolithotomy cases, and bilateral recurrence after three years in one of the 29 pyelolithotomy cases, and persistence of septic manifestations in one. There was also septic recurrence in one case in the other kidney after nephrectomy. In all the other cases the outcome has been perfect. In 86.4 per cent. of the pyelolithotomy cases the urine is clear and there have been no disturbances from the urinary apparatus during the twelve to fourteen years to date. With multiple calculi, the kidney tissue was usually damaged so that secondary nephrectomy was finally required.

Pyelography.—Mattei's twenty-three roentgenograms show the wide range of abnormal findings possible with pyelography, the unexpected anomalies and the best mode of access.

Syphilis of the Kidney.—Pain in the left kidney region, pollakiuria and turbid urine, with hematuria were the symptoms in the man, aged 41, whose kidney was removed by Rolando. The superior pole was studded with small cysts containing blood, and the blood vessels in the kidney presented grave vascular lesions of the type familiar in syphilitic vascular disease. He knows of only two similar cases in the literature.

Pediatria, Naples

32: 633-696 (June 1) 1924

Pylorospastic Syndrome in Infants. A. Borrino.—p. 633.
Herpes Zoster and Chickenpox. R. Vaglio.—p. 650.
Etiology of Scarlet Fever. I. Nasso and L. Auricchio.—p. 654.
*Intradermal Reaction in Scarlet Fever. De Villa.—p. 665.
Changes of Serum in Vaccine Treatment. A. Ronchi.—p. 669.
Peroxydase of Human Milk. A. Muggia.—p. 674.
Malta Fever with Hemorrhages. G. Castorina.—p. 680.
Death After Laparotomy of Day Old Infant. F. Spirito.—p. 683.

Intradermal Reaction in Scarlet Fever.—De Villa performed intracutaneous tests with Cristina's cultures. The reaction was positive in 51 per cent. (doubtful in 14 per cent.) of the children without history of scarlet fever, and only in 4.3 per cent. (doubtful in 10 per cent.) of those who had had scarlet fever previously.

Policlinico, Rome

31: 639-670 (May 19) 1924

Biologic and Social Tendencies in Obstetrics. A. Gentili.—p. 639.
*Cellulitis Mistaken for Muscular Rheumatism. F. Viola.—p. 645.
Pharyngeal Application of Radium. L. Cappelli.—p. 647.

Cellulitis Mistaken for Muscular Rheumatism.—Viola describes the history of a patient with an abscess situated on the latissimus dorsi muscle under the angle of the shoulder-blade. The patient had been treated for three weeks on the diagnosis of muscular rheumatism.

31: 289-344 (June 15) 1924. Surgical Section

*Torsion of the Omentum. M. Bufalini.—p. 289.
*Sarcoma of the Rectum. L. Durante.—p. 311.
Secondary Jejunal Ulcer. S. Gussio.—p. 323. Cont'd.

Intra-Abdominal Torsion of the Omentum.—Bufalini ascribes the torsion to a thickening of the omentum and adhesions. In the two cases he reports there had been an operation for hernia not long before. Symptoms from the bladder subsided after the resection; they had evidently resulted from traction alone.

Sarcoma of the Rectum.—Durante adds another case of nonpigmented sarcoma of the rectum to the thirty-one he has found in the literature. Only 80 per cent. of the nonpigmented were operable; 14.2 per cent. have survived for three years. Of the sixty-six melanotic rectal sarcomas, 69 per cent. were operable, and 8.1 per cent. are known to have survived for three years after partial extirpation and 13.1 per cent. after more radical procedures. In his case the sarcoma was in the rectovaginal septum, close to the anus. The nonpigmented sarcomas are of slow growth and do not invade the lymphatics early, if at all. The woman, aged 48, was in excellent condition when seen five months later.

Riforma Medica, Naples

40: 481-504 (May 26) 1924

Cardiovascular Arrhythmia. P. Livierato.—p. 481.
*Pigmentation and Healing of Wounds. L. Torraca.—p. 484.
Diverticulum of the Stomach. F. Perussia.—p. 485.
Ileocolic Invagination. G. Rieppi.—p. 487.
*The Pain in Osteomyelitis of the Clavicle. F. Viola.—p. 488.
Autovaccines in Puerperal Infection. S. Tremiterra.—p. 489.

Pigmentation and Healing of Wounds.—At the Monte Rosa institute for scientific research, Torraca removed patches of skin in guinea-pigs and exposed the animals to the sun at a high altitude. The defects in the pigmented areas of the skin healed faster than those in white skin.

Shoulder-Blade Pain in Osteomyelitis of Clavicle.—Viola observed two instances of osteomyelitis of the clavicle—one of them probably of tuberculous origin. Both patients complained of intense pains in the shoulder. He believes that pressure on the brachial plexus by the inflammatory tumor behind the clavicle accounted for the misleading localization of the pain.

Archivos Españoles de Pediatría, Madrid

8: 193-258 (April) 1924

Pneumonia in Children. A. Romeo Lozano.—p. 193.
*Epidemic Meningitis in Children. F. Zamarriego.—p. 211.
*Treatment of Suppurating Glands. Barrio de Medina.—p. 221.

Meningococcus Meningitis.—Zamarriego recalls the severe epidemic of meningitis in Spain in 1912 and 1913. He emphasizes the favorable prognosis possible when the disease is recognized early and serotherapy begun at once in adequate doses. He describes three recent cases in infants less than 5 months old. The onset was with eight or ten days of diarrhea or three weeks of signs of headache or one week of fever and stiff neck.

Glandular Lesions and the Quartz Lamp.—Barrio de Medina calls attention to the rapid healing under ultraviolet rays treatment in a case of discharging suppuration of the submaxillary glands in the little daughter of a confrère. The glandular lesions had proved refractory to all other treatment for months. No other measures were applied, and the eleven exposures resulted in almost perfect healing. In another case of tuberculous adenitis in the right axilla, with fistulas, the cure was complete with four sittings.

Prensa Médica Argentina, Buenos Aires

10: 809-840 (April 20) 1924

*Serologic Test for Cancer. A. H. and H. L. Roffo.—p. 809.
*Serologic Tests in Tuberculosis. P. M. Barlaro.—p. 818. Conc'n.
*The Cerebrospinal Fluid in Disseminated Sclerosis. A. Podestá.—p. 830.
*Postural Differentiation of Pleural Effusions. Heidenreich.—p. 830.

Flocculation Reaction in Malignant Disease.—The Roffos applied the Sachs-Georgi technic, using antigens from rat cancers or rat embryos or human mammary cancer or metastatic gland tissue. The rat carcinoma proved the most potent, yielding positive results in 94.65 per cent. of 161 cancer cases, and negative responses in 98.94 per cent. of 95 patients free from malignant disease. The shortest interval from the first symptoms of the cancer was twenty days. One cancer of the bladder of three months' standing responded positively to four different antigens.

Serologic Tests in Tuberculosis.—Barlaro has been studying this subject in the medical centers of Europe and in his own laboratory, and is convinced that a positive complement fixation is a sign of an active process of some standing.

The Cerebrospinal Fluid in Multiple Sclerosis.—Podestá reports that the three colloidal tests (gold, benzoin and mastic) were constantly positive in the cerebrospinal fluid in his case of multiple sclerosis while the findings were negative with the Wassermann test, and with tests for globulins and albumin, and the cell count was within normal range. He has found this discordance between the serologic findings valuable in differential diagnosis.

Postural Aid in Diagnosis of Small Pleural Effusions.—Heidenreich declares that a small pleural effusion shifts its location most instructively on changing from a sitting position to a ventral recumbent position. This will reveal an effusion that has escaped all other means of investigation.

Semana Médica, Buenos Aires

1: 735-786 (April 24) 1924

*Cancer of the Penis. C. M. Squirru.—p. 735.
The Peripheral Venous Tension. Manuel del Sel.—p. 739.
Dosage with Radioactive Substances. P. C. Escalada.—p. 750.
Digestion and Metabolism in Infants. J. P. Garrahan.—p. 763.
Arguments Against Insanity as Cause for Divorce. Nerio Rojas.—p. 772.
Practical Notes on Radiology. C. Heuser.—p. 775.
*Sore Throat in Acute Leukemia. A. Podestá.—p. 776.
Paroxysmal Tachycardia. T. Padilla.—p. 777.

Cancer of the Penis.—Squirru has encountered four cases of cancer of the penis, of three, six and eighteen months' standing, in 1,000 cases of cancer. He operates on the same principle as for cancer of the breast, and there has been no recurrence to date in the three surviving cases. His illustrated description shows the crab-like shape of the incision, as he resected the external inguinal glands as well as the lumbar aortic.

Sore Throat in Acute Leukemia.—The diagnosis of Vincent's angina was confirmed by the microscope, but the man, aged 43, died the ninth week, and necropsy corroborated the blood findings of acute leukemia. This is the second case of the kind Podestá has encountered. Tonsillectomy had been done as a last resource, and the family attributed the fatal termination, a week later, to this operation, but the blood findings demonstrated that the leukemia had preceded it.

1: 787-838 (May 1) 1924

*Intestinal Spirochetosis. C. P. Waldorp.—p. 787.
*Shock Treatment of Genital Hemorrhage. S. E. Bermann.—p. 794.
Anthrax. A. A. Rissotto.—p. 812.
Contraindications for Radium Therapy. P. Castro Escalada.—p. 823.
The Kahn Precipitation Test for Syphilis. A. Podestá.—p. 827.
Irradiation and Organotherapy in Stimulating and Checking Organ Functioning. V. Foveau de Courmelles.—p. 828.

Intestinal Spirochetosis.—Waldorp reviews the scanty literature on intestinal disturbances from spirilla, and urges study of the spirochetes in the mouth. The chronic dysenteriform enteritis that may be observed from this cause yields promptly to arsenical treatment.

Shock Treatment of Genital Hemorrhage.—Bermann sensitized the patients with subcutaneous injection of 10 c.c. of normal horse serum. Eleven days later a similar injection of 1 or 2 c.c. of the same induced a mild therapeutic shock reaction. This treatment has proved effectual in his hands in metrorrhagia and postabortive menorrhagia, the hemorrhages of the menopause, and those from inflammation in the internal genitals. It also arrested leukorrhea in the pregnant or set up by a foreign body, and it cured vulvar eczema rebellious to other measures. He gives the details of forty cases of these various types. He generally gave from one to four of the injections in all. He avoids the menstrual periods, and never applied this treatment in febrile cases. Tuberculosis and asthma also contraindicate it.

Deutsches Archiv für klinische Medizin, Leipzig

144: 113-176 (May) 1924

Blood Proteins in Diseases. M. Schindera.—p. 113.
Blood *p*H in Heart Disease. R. Cobet.—p. 126.
Capillaroscopy and Circulation. E. Jürgensen.—p. 144.
*Caramel in Health and in Diabetes. Grafe and von Schröder.—p. 156.

Caramel in Health and in Diabetes.—Grafe and von Schröder tested the properties and action of levoglucosan, a sugar anhydrid contained in caramel. It does not reduce Fehling's solution, and is not changed by the ferments of the gastro-intestinal system. From 5 to 10 per cent. of the amount ingested appears in the urine. The blood sugar does not increase, and the acidosis is favorably influenced.

Deutsche medizinische Wochenschrift, Leipzig

50: 747-786 (June 6) 1924

*Experimental Research on Insulin. J. A. Collazo et al.—p. 747.
"Rabbit Unit of Insulin." E. Laqueur.—p. 748.
Thrombosis of Sinus Resembling Meningitis. O. Klein.—p. 750.
*Sedimentation Test in Encephalitis. Lorenz and Berger.—p. 752.
Reading of Meinicke Reaction. G. Elkeles.—p. 753.
*Bactericidal Influence of Temperature. G. Schwarz.—p. 754.
Treatment of Pleurisy. H. Zimmer.—p. 756.
Psychanalysis. F. Reichmann.—p. 758.
*Grave Firearm Wound of Abdomen. E. Glass.—p. 761.
*Affection of Otolithic Apparatus. T. von Liebermann.—p. 762.
Pneumococcus Peritonitis in Children. Strauss.—p. 762.
Poisoning with Illuminating Gas. F. Rosenberger.—p. 763.
Occlusive Pessary. K. Bergl.—p. 763.
Recent Literature on Venereal Diseases. O. Grütz.—p. 764.
German Colonial Medicine. Steudel.—p. 766. Conc'n.
Social Insurance Contracts. S. Alexander.—p. 768.

Experimental Research on Insulin.—Collazo, Händel and Rubino killed guinea-pigs four hours after ingestion of glucose and injection of insulin, and found a distinct increase in the glycogen deposits in liver and muscles. They believe that the absence of the hypoglycemic spasms accounts for their findings. Addition of insulin to a liver emulsion did not enhance the cleavage of its glycogen. The formation of lactic acid in emulsions of muscles was accelerated. They are inclined to consider the muscles as the main place of action of insulin.

Sedimentation Test in Encephalitis.—Lorenz and Berger determined the sedimentation speed of erythrocytes in eighteen patients with epidemic encephalitis. In some of them the speed was accelerated, in others retarded. The test is of no diagnostic value in encephalitis.

Bactericidal Influence of Temperature.—Schwarz studied the influence of temperature on the bactericidal power of blood. He found that a rise in temperature injures the blood more

than the bacilli. It was found also that germs are more resistant to higher temperatures in the body than in vitro. He was not able to cultivate streptococci above 40 C., even those isolated from a patient with a temperature of 41 C. Nevertheless the artificial increase of body temperature in remissions of grave infections had beneficial effects.

Grave Firearm Wound of Abdomen.—Glass' patient was wounded by a revolver shot in the abdomen. Laparotomy was performed within a quarter of an hour. The small intestine was perforated eight times, the colon five times, the mesentery three times, and the urinary bladder was also injured. Feces, gas and urine were present in the peritoneal cavity. All the wounds were sutured and the patient recovered.

Affection of Otolithic Apparatus.—Contrary to other authors, Liebermann believes in an isolated affection of the otolithic apparatus only in the absence of nystagmus during dizzy spells.

Deutsche Zeitschrift für Chirurgie, Leipzig

185: 289-426 (May) 1924

*Spastic Ileus. W. Florack.—p. 289.
*Pectineal Hernia. E. Fincke.—p. 323.
Idiopathic Dilatation of Biliary Passages. M. Budde.—p. 339.
Case of Partial Giant Growth. H. Steindl.—p. 356.
*Blocking the Splanchnic Nerves. E. Metge.—p. 368.
Mechanism of Subcoracoid Dislocation of Humerus. Tobler.—p. 378.
Postoperative Irradiation. C. Linder.—p. 385.
Phrenicotomy in Pulmonary Tuberculosis. H. Hauke.—p. 395.
Gangrene of Skin After Infusion. E. Eick.—p. 410.
Accessory Suprarenals on Vas Deferens. Esau.—p. 417.
Incarceration of Hernia from Poppy Seeds. Esau.—p. 419.
Dislocation After Traumatic Separation of Femur Epiphysis. Drevermann.—p. 422.

Spastic Ileus.—Florack relates that nothing to explain the ileus was found at the laparotomy except the contracted segment, 4 cm. long, of the small intestine, about 10 c.c. above the cecum. The entire small intestine was drawn out and examined, and as it was replaced the contracted portion relaxed, the aspect of the bowel then the same as elsewhere. A low loop was sutured to the skin, but no further intervention was necessary, and there has been no return of the obstruction during the two or three years since. In only three of the numerous cases on record treated by laparotomy alone did the spasm persist, and there was a tenia in one of these cases. The fact that the contraction often is such a narrow ring suggests reflex action. Klett and Jenckel witnessed the subsidence of the spasm under atropin by the vein or mouth in two cases each, but it has failed in other cases. Intraspinal anesthesia has relaxed the spasm in some instances, and might be given a trial before operating. Florak has seen the small intestine contract when irritated during local anesthesia. As a rule, the general condition is not so grave in the spastic form of ileus.

Pectineal Hernia.—In Fincke's two cases the hernia did not emerge through the femoral canal but sagged down through a gap in the pectineal fascia. This should be suspected in ileus of obscure origin; any protrusion of Scarpa's triangle is instructive.

Blocking the Splanchnic Nerves.—Metge found that the blood pressure dropped with the Braun technic the same as with the Kappis method, while he lost 6 of the 13 patients anesthetized with the Braun technic. He has now discarded it in favor of Kappis' method, and has applied the latter in a recent series of 143 cases. There were post-operative pulmonary complications in 10 per cent. and vomiting in a large number of the gastro-enterostomy cases. In 6 of the 29 cases with fatal outcome, heart failure was responsible. This group included 4 cancer cases, and the drop in the pulse had been from 120 to 40 or below in 3 of these fatal cases although the pulse had returned to its previous figure by the end of the operation.

Irradiation After Mammary Cancer Operations.—Linder regrets that cancer statistics usually fail to list the irradiated cancers separately. The general average from nine German clinics cited is from 37 to 53 per cent. surviving for three years. In his own experience (101 cases, Basel), 77 per cent. of those given one or two intensive exposures have shown no signs of recurrence for three years to date. Only 17 per cent. have survived of those not irradiated, and 43 per cent. of those irradiated. None have survived of those given a course of mild irradiations. Medullary cancer seemed to respond most favorably to the postoperative exposures. This type formed 56 per cent. of the three year and 50 per cent. of the four year survivals.

Artificial Unilateral Paralysis of the Diaphragm.—Hauke remarks that phrenicotomy is less effectual than pneumothorax in treatment of pulmonary tuberculosis, but its action is durable. The process continued to progress in all of the five acute cases treated by exeresis of the phrenic nerve, with death in a few months. In ten chronic cases, only one showed even slight improvement. The effect was favorable in eight cases in which the exeresis had been applied to supplement pneumothorax or thoracoplasty, and this seems to be the only promising field for it.

Gangrene After Saline Infusion.—Eick adds two more to the sixteen cases he has found on record in which an extensive area of gangrene developed in the skin after subcutaneous injection of physiologic sodium chlorid or Ringer's mixture. Epinephrin had been added to the fluid in his cases.

Aberrant Suprarenal Tissue.—Esau found recently a yellow body as large as a bean on the spermatic cord in an operation for inguinal hernia in a youth. It proved to be aberrant suprarenal tissue.

Klinische Wochenschrift, Berlin

3: 1009-1056 (June 3) 1924

Climatic Physiology. A. Loewy.—p. 1009.
*Serum Viscosity and Metabolism. S. M. Neuschlosz.—p. 1013.
Etiology of Epidemic Encephalitis. A. Schnabel.—p. 1015.
*Pregnancy Glycosuria. M. Nothmann.—p. 1019.
Meinicke's Turbidity Reaction. Klopstock and Dölter.—p. 1022.
*Endogenous Infection of Intestine. Reis.—p. 1025.
Dysentery Ameba in Sputum and Urine. Petzetakis.—p. 1026.
Colloidal Reaction in Cerebrospinal Fluid. R. Schwarz and E. A. Grünewald.—p. 1026.
"Hereditary Clubbed Thumbs." H. Hoffmann.—p. 1027.
"Intracutaneous Therapy." E. Rajka.—p. 1027.
*The Cerebrospinal Fluid. G. Lehmann and A. Meesmann.—p. 1028.
*Hypoglycemia in Liver Derangement. W. Steinbrinck.—p. 1029.
Influenza Sepsis with Rash. Leichtentritt and Schober.—p. 1029.
Interpretation of Electrocardiograms. A. Weber.—p. 1032.
Survey on Tissue Respiration. H. Löhr.—p. 1038.

Specific Viscosity of Serum and Metabolism.—Neuschlosz found in thyroid disturbances a fair accordance between the basal metabolic rate and the results of his and Hellwig's figures of the specific viscosity of the serum (proportion between viscosity and concentration of proteins). The average ratio in healthy subjects was 1.1; in hyperthyroidism 0.93 (lowest figure 0.84). The specific viscosity increases in hypothyroidism.

Pregnancy Glycosuria.—Nothmann made serial determinations of alimentary glycemia in pregnancy, using Traube's method (two doses of 30 gm. of glucose given one hour apart). The second dose does not increase the blood sugar in healthy subjects nor in those with renal diabetes. Pregnant women reacted in the same way.

Endogenous Infection of Intestine.—Reis found in the empty upper parts of the small intestine in adults a p_H of 7.2. In fermentative dyspepsia, the reaction is more acid, in putrefactive more alkaline. Colon bacilli may cause either condition according to the reaction, which is acid with inhibited secretion of the infected intestine.

Physical Chemistry of Cerebrospinal Fluid.—Lehmann and Meesmann found that the composition of the cerebrospinal fluid and aqueous humor when compared with the blood is in agreement with the figures theoretically to be expected under the supposition of Donnan's equilibrium of fluids separated by membranes. An increased concentration of proteins in the fluid causes a reduction of the chlorin ion and p_H by which the equilibrium is maintained. The so-called rest current attributed to the retina is explained as the expected difference of potential between blood and aqueous humor.

Hypoglycemia in Liver Derangement.—Steinbrinck observed all the typical signs of hypoglycemic reaction in animals poisoned with mushrooms. Infusions of glucose acted beneficially in these animals as well as in poisoned patients. He

recommends repeated intravenous infusions of glucose in every case of severe disturbance of the liver.

Monatsschrift für Kinderheilkunde, Berlin

28: 97-192 (May) 1924

*Tetany and Alkalosis. O. Tezner.—p. 97.
Colloid Instability and Sedimentation Test in Infants. Hille.—p. 137.
Physical Development with Inherited Tuberculous Taint. Peiser.—p. 146.
*Malignant and Benign Forms of Congenital Syphilis. Herz.—p. 159.

Tetany and Alkalosis.—Tezner compares recent works on alkalosis and describes his research undertaken to determine whether the tetany symptoms that are liable to develop during augmented respiration are actually due to alkalosis, and whether alkalosis from other causes necessarily entails tetany. Among the practical results realized was the complete subsidence of all the symptoms of manifest tetany in one child given 3 gm. of ammonium chlorid daily for three days; the symptoms returned when the drug was suspended, and could be banished anew on its resumption. In another apparently identical case, not a trace of effect from the drug could be detected. In a third child, the electric excitability declined under 5 gm. for three days and then rose again the fifth day notwithstanding resumption of the drug, and the child died that evening. It was an infant of 7 months with rickets. It had been having convulsions and birth paralysis.

Malignant and Mild Congenital Syphilis.—Herz calls attention to the difference in the severity and course of the syphilis in the offspring according to the treatment which the parents had been taking previously. When specific treatment has been given the parents, but not with sufficient intensity, the spirochetes become modified in such a way that the strain is peculiarly malignant for the offspring. He suggests study of syphilis in rabbits inoculated with virus from infants with the malignant and mild types.

Münchener medizinische Wochenschrift, Munich

71: 667-700 (May 23) 1924

*Diagnosis of Retroversion-Retroflexion. R. T. v. Jaschke.—p. 667.
Etiology and Curability of Cancer. E. Opitz.—p. 668.
Etiology of Uterine Metropathies. W. Liepmann.—p. 671.
Peripheral Leukopenia from Retention in Liver. Müller.—p. 672.
*Hemoclastic Crisis and the Vegetative System. F. Glaser.—p. 674.
Action of Capsella Bursa Pastoris. H. Seel.—p. 676.
Tuberculin Inunction Treatment. G. Pohl-Drasch.—p. 678.
Thin Stomach Tube. Ganter.—p. 681.
Pathogenesis of Epidemic Meningitis. P. Wichels.—p. 682.
Pulmonary Tuberculosis in General Practice. K. H. Blümel.—p. 683.
Legal Aspect of Sterilization of the Unfit. Boeters.—p. 685.

Diagnosis of Retroversion-Retroflexion.—Jaschke's experience with 1,000 patients confirms Theilhaber's opinion that uncomplicated retroflexion of the uterus causes no characteristic symptoms except the palpation findings.

Hemoclastic Crisis and the Vegetative System.—Glaser found great spontaneous changes in the leukocytes, which he attributes to the changes of the vegetative tonus.

71: 701-732 (May 30) 1924

*Carotid Compression Experiment. H. E. Hering.—p. 701.
*Depressor Vascular Reflex from Idem. E. Koch.—p. 704.
*Diphtheria Immunization. R. Degkwitz.—p. 705.
*Colloids of Blood and Cholesterol. H. Handovsky.—p. 708.
Blood in Hemorrhagic Pregnancy Nephritis. L. Kürthy.—p. 709.
Resistance of Erythrocytes in Infants. E. Saenger.—p. 712.
*The Wassermann Reaction in the Elderly. F. Port.—p. 712.
Action of Serum on Intracutaneous Tuberculin Test. K. v. Hofe.—p. 714.
Treatment of Hydradenitis Axillaris. W. Klug.—p. 715.
*Microscopic Technic. Carl.—p. 717.
Fatal Corrosion of Larynx from Fumes in Soldering. Koelsch.—p. 718.
*Ileus in Infant. O. Voigt.—p. 719.
Kerssenboom's Staining of Tubercle Bacilli. Knipping.—p. 720.
"Extirpation of Uterus or Castration?" H. Sellheim.—p. 720.
Pulmonary Tuberculosis and the Practitioner. III. Blümel.—p. 721.

Carotid Compression Experiment.—Hering attributes the bradycardia in the so-called "vagus compression experiment" to a reflex originating at the broadened part of the common carotid at its division (sinus caroticus). He found not only a bradycardia but also an independent lowering of the blood pressure due to a vascular depressor reflex when pinching slightly or stimulating with a current the carotid sinus in various animals. Inner pressure (from increased blood pressure) also causes both reflexes. He believes that this is more important for the regulation of blood pressure than the known depressor reflex from the aorta. Sometimes the stimulation of one sinus brought the blood pressure to zero, which indicates the possibility of grave accidents if the carotid were to be ligated at this point. The increase in blood pressure after ligation of both common carotids is due to an opposite reflex from the lowering of pressure in the sinus. Denervation of both sinuses has much the same effect. When combined with resection of the depressor nerves in dogs, it increases the blood pressure extremely (sometimes over 250 mm. Hg.). The centripetal part of the reflexes goes over the superior cervical ganglion. The internal carotid nerves in man are the probable pathway. Chloroform anesthesia enhances the reflex which persists even after the corneal reflex is abolished. It was impossible to lower the blood pressure by this method if it was increased by epinephrin or barium chlorid.

Depressor Vascular Reflex in Carotid Compression.—Koch confirmed Hering's observations on twenty-eight out of fifty patients. The reflex was more frequent and more marked in men (maximum lowering of 44 per cent. of original blood pressure). The higher the blood pressure, the more pronounced, as a rule, the reflex. He explains the negative cases by the difficulty in finding the division of the carotid artery and by the possibility of compensation of the reflex by factors which increase the pressure.

Diphtheria Immunization.—Degkwitz intends to introduce in Germany, on a larger scale, Behring's toxin-antitoxin immunization and Schick's test.

Colloids of Blood and Cholesterol.—Handovsky found that a part of the cholesterol of the serum is protected by the euglobulins against extraction with ether. The amount of this hydrophil fraction of cholesterol is parallel with the amount of euglobulin.

The Wassermann Reaction and Syphilitic Aortitis in Old People.—Port found in about 21 per cent. of his 394 patients over 50 years of age a positive Wassermann reaction. He believes, therefore, that the general morals were not higher in the "good old times" than they are now. Aortitis is very frequent in these patients. Disturbances of pupil reflexes should not be explained simply as signs of old age.

Hints for Microscopy.—Carl recommends to centrifugate the cover slip with the section. A few turns are sufficient to cause the section to adhere evenly to the slip.

Ileus from Compound Licorice Powder in Infant.—Voigt observed a fatal stercoral ileus in an infant (12 days old) after a friend of the family had given him several teaspoonfuls of compound licorice powder. The overdose probably caused a spasm of the colon.

Wiener klinische Wochenschrift, Vienna

37: 537-560 (May 29) 1924

*Weakness of Muscles. J. Pal.—p. 537.
Diagnosis of Rupture of Uterus. H. Heidler.—p. 541.
Sedimentation Test in Gynecology. F. Becher-Rüdenhof.—p. 545.
*Treatment of Spastic Flatfoot. T. Engelmann.—p. 547.
Sarcoma Removed from Os Pubis. H. Lorenz.—p. 549.
"Combined" Suicide. G. Strassmann.—p. 550.
Anatomy and Physiology of the Midbrain, Diencephalon and Basal Ganglia. C. v. Economo. Supplement.—pp. 1-8.

Weakness of Muscles.—Pal defines adynamia of muscles as lack of energetic efficiency with preservation of active motility. All the muscles, including the heart, may be affected. A disturbance of glycogenesis has some causal relation. Caffein is indicated in such conditions. Infusions of glucose may act favorably. Pick's experiments have made it probable that addition of insulin would be of value.

Treatment of Spastic Flatfoot.—Engelmann has applied with good results, in twenty-four severe cases, Moser's method to the treatment of spastic flatfoot. He injects 10 c.c. of a 0.5 per cent. solution of procain in the peroneus muscles and an equal amount into the extensors.

37: 561-584 (June 5) 1924

*Precipitin Reaction with Diphtheria Toxin. R. Kraus et al.—p. 561.
*Egyptian Ophthalmia. E. Fuchs.—p. 564.
A Gynecologic Reflex. F. Kermauner.—p. 566.
Numbers Instead of Names for the Teeth. C. Pirquet.—p. 566.
Phenoltetrachlorphthalein Liver Function Test. Rosenthal.—p. 566.
Goat Milk Anemia. E. Kirsch-Hoffer and O. Kirsch.—p. 568.

Saponin Drugs and Diuresis. V. Kollert et al.—p. 571.
"Protein Therapy." R. Hölscher.—p. 573.
Symptoms of Rupture of Uterus. H. Heidler.—p. 574. Conc'n.
"Pains in Pulmonary Tuberculosis." A. Schick.—p. 578.

Precipitin Reaction with Diphtheria Toxin.—Kraus, Löwenstein and Baecher confirm, in general, Ramon's investigations on the precipitin reaction with diphtheria toxin. They did not find, however, a complete parallelism between the units of various samples of antitoxin and its precipitin titer. The immunizing value of Ramon's anatoxin does not depend on the preservation of its precipitinogenic action.

Egyptian Ophthalmia.—Fuchs describes the fight against eye diseases in Egypt. Although the country has the oldest eye hospital in the world, the aid fell short of the needs until Sir Ernest Cassel donated £41,000 for this purpose after the medical congress in Cairo, in 1902. The money was used for equipment of movable hospitals. The work was organized by Dr. A. F. MacCallan. Over 1,669,000 patients were treated during the year 1923. About 95 per cent. of the population suffer from trachoma. Gonorrheal infection is the main cause of the severe "Egyptian ophthalmia." Infections with the Koch-Weeks and Morax-Axenfeld bacillus are next in frequency as the cause.

Zeitschrift für Tuberkulose, Leipzig

40: 1-80 (April) 1924

Tuberculin from Bouillon Cultures. A. Jesionek.—p. 1.
*Technic for Tuberculin Treatment. C. Fischer.—p. 28.
Roentgenography of Tuberculosis in Children. G. Simon.—p. 34.
"Reinfection or Metastasis in Tertiary Pulmonary Tuberculosis." Bruening.—p. 38. Reply. Ballin.—p. 42.

Best Technic for Tuberculin Treatment.—Fischer's experience apparently demonstrates that tuberculin treatment is most effectual when the tuberculin is injected pure, mixed only with own serum.

Zentralblatt für Gynäkologie, Leipzig

48: 897-944 (April 26) 1924

*Pregnancy Edema. J. Wieloch.—p. 898.
Fetal Heart Tones Audible at a Distance. Wyder.—p. 902.
Phlorizin Glycosuria in Pregnancy. E. Klaften.—p. 903.
Corpus Luteum Cysts. Von Oettingen.—p. 910.
Multiple Corpora Lutea in Simple Pregnancy. Nissen.—p. 916.
*Artificial Respiration in Asphyxia Neonatorum. Baumm.—p. 917.

Pregnancy Edema and Prophylaxis of Eclampsia.—Wieloch bases his treatment on Zangemeister's investigations on the connection between pregnancy edema, pregnancy nephritis and eclampsia. He believes that the two latter are the sequels of the abnormal permeability of the vessel walls, the resulting edema in the brain causing the convulsions of eclampsia. This tendency to insidious edema can be detected early by systematic weighing of the woman, and measures to combat the tendency to edema ward off pregnancy nephritis and eclampsia. To supplement the usual general measures, Wieloch gives intramuscular injections of colloidal solution. This combats the abnormal permeability of the capillary walls, and he was able to bring about by this means a marked reduction in the weight in 50 per cent. of seventy-five women given injections of 5 c.c. of a solution of gelatin, and in 80 per cent. of fifty-one women injected with 10 c.c. of a 5 per cent. acacia-Ringer solution. In two or three cases, high blood pressure was reduced at the same time. He was guided by the weight in giving the injections, daily or at longer intervals.

Artificial Respiration in Asphyxia Neonatorum.—Baumm describes an old method that has been used for many years with the best success in the Breslau school for midwives. The infant is grasped by the shoulders in the same manner as for Schultze swinging. The child's body is suspended vertically between the spread legs of the physician. The child is then raised and lowered in this vertical suspended position with jerky movements, which causes the air to be inspired and expired with a distinctly audible sound. When the child is raised with a jerk, the diaphragm is forced upward by the abdominal viscera and the thorax is contracted, producing expiration. When the child is lowered, also with a jerk, the diaphragm drops down and the thorax is extended, causing inspiration. This simple procedure may be employed even with premature infants.

48: 1169-1232 (May 31) 1924

*The Eclampsia Problem. W. Hülse.—p. 1179.
Eclampsia Followed by Epilepsy. R. S. Hoffmann.—p. 1184.
*Postpartum Amaurosis. K. Fink.—p. 1188.
*Pulmonary Edema in Pregnancy. U. Westphal.—p. 1191.
The Uterus-Vagina Tampon in Hemorrhage. E. Vogt.—p. 1195.
"Hormone Sterilization." L. Haberlandt.—p. 1197.
Hereditary Agalactia. K. Volkmann.—p. 1198.
Air Embolism of Uterine Origin. H. Baumm.—p. 1201.
Pseudohermaphrodism in Two Sisters. F. Gál.—p. 1203.

Primary Spasm of Vessels in Eclampsia.—Hülse ascribes eclampsia to a functional contraction of the arterioles, which increases the blood pressure and is followed by ischemia of the brain. This entails the coma and clonic spasms. The nutritive disturbances due to contraction of the vessels produce the lesions in the liver and the kidneys. He presents evidence to prove that the increase of blood pressure is caused by peptone in the blood, which is the result of the eclampsia metabolic disturbance. He comments on the analogy between eclampsia and acute glomerular nephritis, both being the results of toxic vascular spasm.

Amaurosis Postpartum.—Fink reports a rare case of transitory amaurosis, attributing it to anemia caused by postpartum hemorrhage.

Pulmonary Edema in Pregnancy.—Westphal explains two cases of acute pulmonary edema during pregnancy by intoxication, due to metabolic disturbances in the placenta. The poison, acting on the pulmonary capillaries, causes the effusion of serous fluid into the alveoli.

Casopis lekaruv ceskych, Prague

63: 833-868 (May 31) 1924

Cosmetic Surgery of Nose and Ear. N. Soloncov.—p. 833.
Treatment of Fractures. I. Pecirka.—p. 839.
*Perforations of Nasal Septum. A. Sercer.—p. 842.
*Cancer of Esophagus. E. Kliment.—p. 845. Conc'n.
Prevention of Rhinoscleroma. J. Cisler.—p. 848. Conc'n.

Perforations of Nasal Septum.—Sercer describes perforations occurring a few days after submucous resection of the nasal septum. They are due to thrombosis of branches of the sphenopalatine artery caused by small abscesses between the mucous membranes.

Cancer of Esophagus.—Kliment describes a case of cancer of the esophagus in a man who for years had been using large doses of sulphur depuratum.

63: 869-904 (June 7) 1924

*Extra-Uterine Pregnancy. A. Ostrcil.—p. 869.
*Tumors of the Thyroid Gland. K. Milota.—p. 873.
*Tuberculosis Reaction with Active Serum. J. Kabelik and Gellner.—p. 878.
Spigelian Hernia. A. Vána.—p. 882.
Microsublimation. A. Mládek.—p. 886.

Extra-Uterine Pregnancy.—Ostrcil has observed an increase in the number of extra-uterine pregnancies since the war. He attributes it to infection with gonorrhea by the returning husband, and to the prevalence of criminal abortion. He warns against intraspinal anesthesia in operations for ruptured tubal pregnancy because it lowers the blood pressure still further.

Tumors of the Thyroid Gland.—Milota describes two cases of malignant tumor of the thyroid gland in dogs. In one of them a carcinomatous type was prevalent in some of the metastases, while others resembled sarcoma. Four photomicrographs are added.

Tuberculosis Reaction with Active Serum.—Kabelik and Gellner describe a method resembling Hecht's for serodiagnosis of tuberculosis with Boquet and Nègre's antigen. The icebox method eliminated many nonspecific fixations of complement. Their results in 105 serums were satisfactory.

Nederlandsch Maandschrift v. Geneeskunde, Leiden

12: 239-302 (June) 1924

*Embryonal Development After Irradiation. L. F. Driessen.—p. 239.
*The March Peak in Childbirths. D. G. Wesselink.—p. 248.
Pituitary Extract with Prolapse of Cord. Wesenhagen.—p. 256.
*Vesicovaginal Fistula. M. N. Roegholt.—p. 259.
The Vaginal Secretion. P. C. T. van der Hoeven.—p. 265.
*Cesarean Section with Placenta Praevia. S. Bouwer.—p. 269.
The Mechanism of Delivery. P. C. T. van der Hoeven.—p. 290.
Recent Progress in Obstetrics. H. P. A. Smit.—p. 297.

Effect on Offspring of Roentgen-Ray Treatment of the Mother.—Driessen emphasizes the difference between the

effect according as the exposures are made before or after conception. His own experimental research has demonstrated that the development of the embryo in gravid rabbits that had been exposed in youth to the roentgen rays was liable to be abnormal. Hertwig's experiments have confirmed the same for radium. The embryos are retarded in their development or malformed or actual monsters. Driessen's more recent research has shown that with exposure of one half of the uterus, the pregnancy on that side is terminated while the ovum on the other side continues its development unmolested. This proves that the effect of the exposure is a direct action on the ovum, and cannot be ascribed to injury of the ovary. Schinz has reported also that exposures of the gravid rabbit in the first half of the pregnancy cause the pregnancy to retrogress; in the second half, the pregnancy continues, but the young are stillborn or die early. Bagg and Hansen's researches confirm this injurious action of roentgen or radium rays on the ovum, and that it is more fatal the younger the fetus and the more intense the irradiation. The young in every instance are substandard in some way. Malformations are most liable in the central nervous system, the eyes, and blood vessels. Of the eighteen known cases of childbirth after irradiation during pregnancy, only 50 per cent. of the infants were apparently normal at birth, and later development of only one of these is known to have been normal. Archangelsky arrested the pregnancy in seven of ten tuberculous women irradiated to induce abortion before the seventh week, and the dead embryos in every instance exhibited the same signs of direct injury of the cells as in the animal experiments. The abortions were thus not the result of injury of ovary, uterus or blood vessels but of direct injury of the embryo. The roentgen and radium rays have a destructive action on rapidly growing tissues, and the ovum developing in the uterus is no exception to this rule. He warns that even brief exposures for roentgenography may have a deleterious action.

Seasonal Peaks in Childbirths.—Wesselink discusses the possible factors responsible, citing experiences among apes and uncivilized tribes. The peak of the curve is said to be in April in Scotland; in March and February in Sweden, Holland, Belgium and the Netherlands; in February in Spain, Italy and Austria, and in January in Greece. He queries whether the nutrition in different seasons is a factor in conceptions.

Operative Closure of Vesicovaginal Fistula.—Roegholt found that there was not enough tissue available to complete the Braquehaye operation, and he twisted around a pedunculated flap from the posterior wall of the vagina.

Cesarean Section in Placenta Praevia.—Bouwer states that classic cesarean section was applied in thirty-four cases of grave placenta praevia at Groningen. The maternal mortality was 5.88 per cent., both women succumbing to preexisting infection. The fetal mortality was 17.65, but half of the fetal fatalities had occurred before the operation.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2089-2180 (May 10) 1924

Dislocation of Hip Joint in Fetus. R. J. Harrenstein.—p. 2090.
*Herpes Zoster and Varicella. H. W. Berinsohn.—p. 2097.
*Condom Tampon for the Nose. J. van der H. Leonhard.—p. 2099.
*Cultivation of Tissues Outside the Body. J. de Haan.—p. 2108.
*Periarterial Sympathectomy. S. M. Kropveld.—p. 2117.
Early Exercise of Parts After Operations. Van Trooijen.—p. 2151.

Herpes Zoster and Varicella.—Berinsohn relates that in 250 cases of varicella and 71 of herpes zoster in his practice in the last fifteen years, all but 6.8 per cent. of the varicella cases were in children under 9, while herpes zoster occurred only in 11.2 per cent. before 6 and jumped then to 19.7 per cent. and averaged nearly this for the following decade. Over 17 per cent. were over 21. This preponderance of the two diseases at different ages suggests the unity of the virus, although varicella entails immunity against varicella but not against herpes zoster.

Condom Tampon for the Nose.—Leonhard has now a record of 1,000 cases in which he has tamponed after operations on the lower part of the nose, using a condom which he packs with gauze. The condom fits tight and keeps the gauze dry while it does not stick to the tissues. The projecting portion is tied and cut off. Headache occurs occasionally, but is relieved by the sedative which he always gives after such operations. Tamponing is not always necessary, but it is a premium which he is glad to pay for the sake of security. His personal experience with almost fulminating hemorrhage after such an operation convinced him of the wisdom of prevention.

Cultivation of Tissues Outside the Body.—De Haan describes his method of continuous drainage of the medium in which the cells are being kept alive.

Present Status of Periarterial Sympathectomy.—Kropveld remarks that the theories proposed to explain the action of Leriche's operation are still unsatisfactory. It certainly entails dilatation of the artery, which is evident even a month later. This dilatation has a favorable influence on trophic disturbances, but why is this favorable influence so uncertain? The fact that recurrences have been observed, indicates that the cause has not been removed.

1: 2461-2560 (May 31) 1924

The Reorganization of the Netherlands Medical Association. P. Muntendam.—p. 2462.
*Cancers in Java. A. E. Sitsen.—p. 2467.
*Phagocytosis in the Lung. J. M. Van Went.—p. 2479.
*Necessity for Necropsy After Accidents. J. P. L. Hulst.—p. 2484.
Improvement in Case of Multiple Sclerosis Under Arsenical Treatment. M. W. Scheltema.—p. 2487.
Vertical Exhaust Pipe for Motor Vehicles. W. R. H. Kranenburg.—p. 2515.

Cancer in Java.—Sitsen has hospital records of 89 carcinomas and 44 sarcomas and 12 other forms of cancer between 1913 and 1923. The patients were natives in 48, 30 and 12 cases in these three groups, and various organs were involved, the same as in other countries, the breast, skin and uterus taking the lead in both natives and Europeans. All types of cancer were seen in the natives, but only one instance of gastric cancer was encountered, and only 7 of the mouth, notwithstanding the prevalence of betel chewing.

Phagocytosis in the Lungs.—Van Went's further research in this line credits the lymphocytes in the lungs with phagocytic power.

Necropsy After Traffic Accidents.—Hulst explains that the responsibility of the driver of the motor vehicle causing the fatal accident might be estimated differently if necropsy revealed unsuspected organic disease. In a case reported, the spine of the apparently healthy man disclosed an advanced tuberculous process that might well have interfered with his making the normal swift movement to get out of the way of the vehicle. The driver was held responsible by the lower court but was exonerated by the court of appeals. Two similar cases have recently been reported in France in which destructive brain tumors were found in the supposedly healthy man and woman run over.

Hygiea, Stockholm

86: 289-320 (May 15) 1924

*The Hearing After Operations for Chronic Otitis. H. Björkman.—p. 289.
Is High Jumping "Unphysiologic" for Girls After Puberty? E. Abramson.—p. 300.
*The Home Medical Library. G. Holmgren.—p. 316.

The Hearing After Radical Operation for Chronic Otitis.—Björkman relates that the hearing was improved in 32 per cent. of his 53 operative cases; in 28 per cent. the hearing became poorer thereafter. In his 20 cases with merely conservative measures, the hearing improved in 55 per cent. and declined in 15 per cent. In all those who before could hear a whisper at not less than 2 dm. the hearing afterward was stationary or improved while it declined in all the others. Transplantation of skin seemed to have a favorable influence on the hearing. The mode of healing also seemed to have an influence, thick solid scar tissue being worse for the hearing than a thin skin over the opening.

The Home Medical Library.—A committee has been formed to issue a set of popularly written booklets on medical subjects and hygiene for the education of the public. Twenty-eight leading physicians have agreed to cooperate in the work. The series forming the library will be completed in two years.